A Socioeconomic Atlas for

Saguaro National Park and its Region

2003

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by

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Acknowledgments

We would like to express our appreciation to the staff of Saguaro National Park, especially Sarah Craighead and Susan Early, for their enthusiasm and support throughout this project. We are also grateful to Warren Brown, Kerri Cahill, Erin Flanagan, and the General Management Planning Team at the park. The National Park Service Social Science Program and Park Planning and Special Studies Division provided support for this project.

About this Atlas

This atlas is one in a developing National Park Service (NPS) atlas series. The purpose of the atlas series is to show socioeconomic trends for regions around individual national park units. Pilot atlases were completed for Harpers Ferry National Historical Park, Joshua Tree National Park, Mount Rainier National Park, and Wilson's Creek National Battlefield. The potential to link these atlases to park planning, e.g., updating the General Management Plan, is now being explored with the Blue Ridge Parkway and Saguaro National Park.

Beginning with Saguaro National Park, park atlases are being completed in collaboration with The Department of Geography at the Pennsylvania State University. For more information about the atlas series, contact Jean McKendry, National Park Service, 1849 C Street NW (3127), Washington, DC 20240 (jean_mckendry@partner.nps.gov).

About the Authors

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Joel Staub is a Masters student in the Department of Geography at the Pennsylvania State University. He specializes in cartography and historical geography. He prepares data, maps, and graphs, and he edits text for the atlas series.

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Preface

Protection of the National Park System requires active and scientifically informed management. If park resources – both natural and cultural – are to be protected for future generations, the NPS must develop efficient ways to monitor the condition and trends of natural and human systems. Such monitoring must provide usable knowledge that managers can apply to the preservation of resources. And the NPS must share this information with surrounding communities, stakeholders, and partners to help them make important choices about their future.

Because of these reasons and more, the NPS has embarked on a significant initiative – the Natural Resource Challenge, an action plan for preserving natural resources and our country's natural heritage within the complexities of modern landscapes (http://www1.nature.nps.gov/challenge/index.htm).

This atlas is one component in that effort. It is a tool for park managers, planners, community leaders, and others to use in addressing the challenge of preserving the natural and cultural resources of Saguaro National Park. Part of that challenge involves understanding conditions outside park boundaries – conditions which can have significant impacts on park resources. Systematic study and monitoring of regional conditions involves, to a large degree, investigation of human activities. This atlas focuses on such human activities, characterizing them in terms of standardized measures known as socioeconomic indicators.

The atlas can currently serve as an aid to management and planning, as a training tool, and as a means to facilitate public participation. It can be of long-term benefit by establishing baseline data for monitoring changing conditions and trends in the region. Through these and other potential uses, the atlas supports the critical goal of improving park management through a greater reliance on usable scientific knowledge, and contributes to meeting the Natural Resource Challenge.

Gary E. Machlis
Visiting Senior Scientist
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Introduction

The purpose of this atlas is to provide park managers, planners, community leaders, and others with a better understanding of changing human activities and socioeconomic conditions in the region surrounding Saguaro National Park. These changes outside a park's boundaries can create complex park management challenges. Information about regional trends and conditions is needed in order to manage and conserve park resources – both natural and cultural – more effectively. This atlas provides such information in a series of maps, complemented by tables, other graphics, and explanatory text.

Maps are effective ways of conveying information. A map can highlight geographical patterns in data by showing the relationship between what is happening and where it is happening. For example, a map that shows a park's road network and also shows the locations of traffic accidents may indicate that certain sections of park roadway are particularly hazardous. Or a map that plots where park visitors come from might show that the park is popular with residents from a particular part of the region or the nation.

The maps in this atlas combine *contextual* information (such as boundary lines, roads, and key towns) with *thematic* information (such as demographic or economic statistics). This combination of contextual and thematic information helps the reader observe general trends inherent in the distribution of data. For example, a map that shows the population growth rate for each county in the park region may reveal that all of the highest growth rates are concentrated in counties south of the park.

Each map is designed to allow for easy comparison, so readers can see how conditions and trends in their own counties compare with those in other counties and relate to larger regional patterns. The consistent map design allows readers to make useful comparisons among two or more maps. For example, comparing maps of federal expenditures per person and poverty rates might reveal that federal expenditures tend to be higher in a region's poorer counties.

There are many potential uses for this atlas. For example, park managers can share the atlas with new park staff, regional staff, the media, or policy makers as a way of orienting them to the basic facts about the region. Planners can use the atlas to examine emerging trends outside the park and to prioritize actions to mitigate any anticipated adverse impacts on park resources. Local and regional leaders can consult the atlas to develop environmental policies that support park management goals while remaining responsive to local needs. Researchers can use the atlas to design studies that have practical benefit to park and ecosystem management. Additional uses are discussed in the atlas' concluding section, pages 76 - 77. Regardless of how it is used, the atlas can serve as a useful reference tool that adds to the body of usable scientific knowledge about Saguaro National Park and its surrounding region.

Socioeconomic Indicators: Valuable Management Tools

The Relevance of Human Activities to Park Resource Management

The management of park resources always requires attention to human behavior and activities. Protection of a threatened archaeological site can mean educating visitors about the Antiquities Act. Controlling non-native plant species can require close collaboration with park neighbors and volunteers. Preservation of scenic values can depend upon the monitoring of emissions from electrical generation plants several states away.

While there is an on-going and healthy debate about how to address this "human factor" in park management, a consensus has emerged about three basic principles:

- people are part of park ecosystems, and their needs and activities must be considered in management plans;
- park managers should be concerned with short and long-term trends, as well as the local, regional, and national consequences of actions; and
- where appropriate, decisions about park resources should be made collaboratively, including federal agencies, local governments, and citizens in the process.

Managing parks in accordance with these principles requires careful planning, for people have many competing needs.

Careful planning requires an accurate and objective assessment of current conditions as well as on-going trends. Hence, understanding the social, cultural, and economic characteristics of the park region is crucial for successful park management.

The Value of Socioeconomic Indicators

One approach to understanding social, cultural, and economic conditions and trends is to use *socioeconomic indicators*. Socioeconomic indicators are regularly collected economic or social statistics that describe or predict changes and trends in the general state of society. For example, the consumer price index (CPI) keeps track of changes in the price of a typical group of consumer goods. The CPI is used to monitor inflation, to compare the cost-of-living in one region of the country to another, and to support economic policy-making. Socioeconomic indicators can address historical trends, present conditions, or future projections.

An integrated set of socioeconomic indicators can be effective in presenting the "basic facts" about the people of a region. Such basic facts are important to park management, and can be used in many ways: assessing the potential impact of government policies, developing sound resource management strategies, designing effective interpretive programs, increasing public involvement in the planning process, and so forth. Like measures of water quality or wildlife populations, socioeconomic indicators enable managers and citizens to make scientifically informed decisions concerning public resources.

The Integrated Set of Indicators

The indicators in this atlas are not simply a collection of various statistics displayed in maps, but an integrated set of indicators organized around broad areas of human activity that are of particular relevance to park management. The selection of a broad range of relevant indicators is important because the dynamics of human interaction on a regional scale are complex. For example, the growth of a new industry can influence a rise in immigration, which in turn can influence other human activities such as housing development. While industry, immigration, and housing are categorically different indicators, each one could be important for a park manager trying to anticipate growth issues that might impact park visitation or ecological systems.

The integrated set of indicators displayed in this atlas encompasses six general categories:

- *General population* indicators measure how many people live in a given area, where those people are concentrated, their ages, patterns of migration, and so forth. General population indicators provide a profile of the people who are neighbors to the park and potential partners in park management.

- *Economy and commerce* indicators measure the flow and distribution of money, materials, and labor. Economy and commerce indicators provide an overview of the interdependent economic relationships among people, businesses, industries, and government within the park region.

- *Social and cultural* indicators measure aspects of personal and group identity such as cultural origin, political and religious beliefs, health, and language. Social and cultural indicators provide insights into the varying perceptions and expectations that people bring with them when they go to their place of work, participate in a public meeting, or visit a park interpretive site.

- *Recreation and tourism* indicators measure activities specifically related to the provision of accommodations, entertainment, and personal services. Recreation and tourism indicators provide a way to analyze the economic role that travelers, vacationers, and other recreationists play in the region surrounding the park, which is itself closely linked to the recreation/tourism sector.

- *Administration and government* indicators measure the structure, resources, and actions of government organizations. Administration and government indicators provide an orientation to the role of government – local, state, and federal – in the park region.

- *Land use* indicators measure the interactions between people and terrestrial resources such as land, water supply, and vegetation. Land use indicators provide a way to gauge the impact of human activities such as farming, forestry, and urban development upon ecosystems within the park region.

Selecting Specific Indicators

Drawing from the six general categories of socioeconomic indicators described above, a menu of 75 socioeconomic indicators was developed. Each indicator was determined to be readily available and mappable at the county level. From this menu, 17 *core indicators* were selected that would be common to all atlases published in this series. The core indicators provide information useful to all park managers. Incorporating these core indicators throughout the series of atlases enables park managers to make comparisons among parks in different regions of the country. Saguaro National Park staff chose additional indicators from the menu described above. Park staff selected these indicators to customize the atlas so that it would target information relevant to their particular management needs. Figure 1 shows the six general categories and the specific indicators included in this atlas; for each category, indicators are listed in the order they appear in the atlas.

The maps in this atlas are based on county-level data wherever possible. County-level data have several advantages. Good quality data are available at this scale, consistently collected at regular intervals, and comparable across all U.S. counties. Also, counties are stable geographic units for monitoring trends, as little change in county boundaries occurs over time. Finally, as administrative and political units, counties significantly influence environmental change and can be important partners in park management.

Technical Notes

Appendix 1 provides the data sources for the indicators presented in this atlas. Appendix 2 provides technical information on the design of the maps. Appendix 3 includes endnotes and text that provide additional information on the measurement of selected indicators.

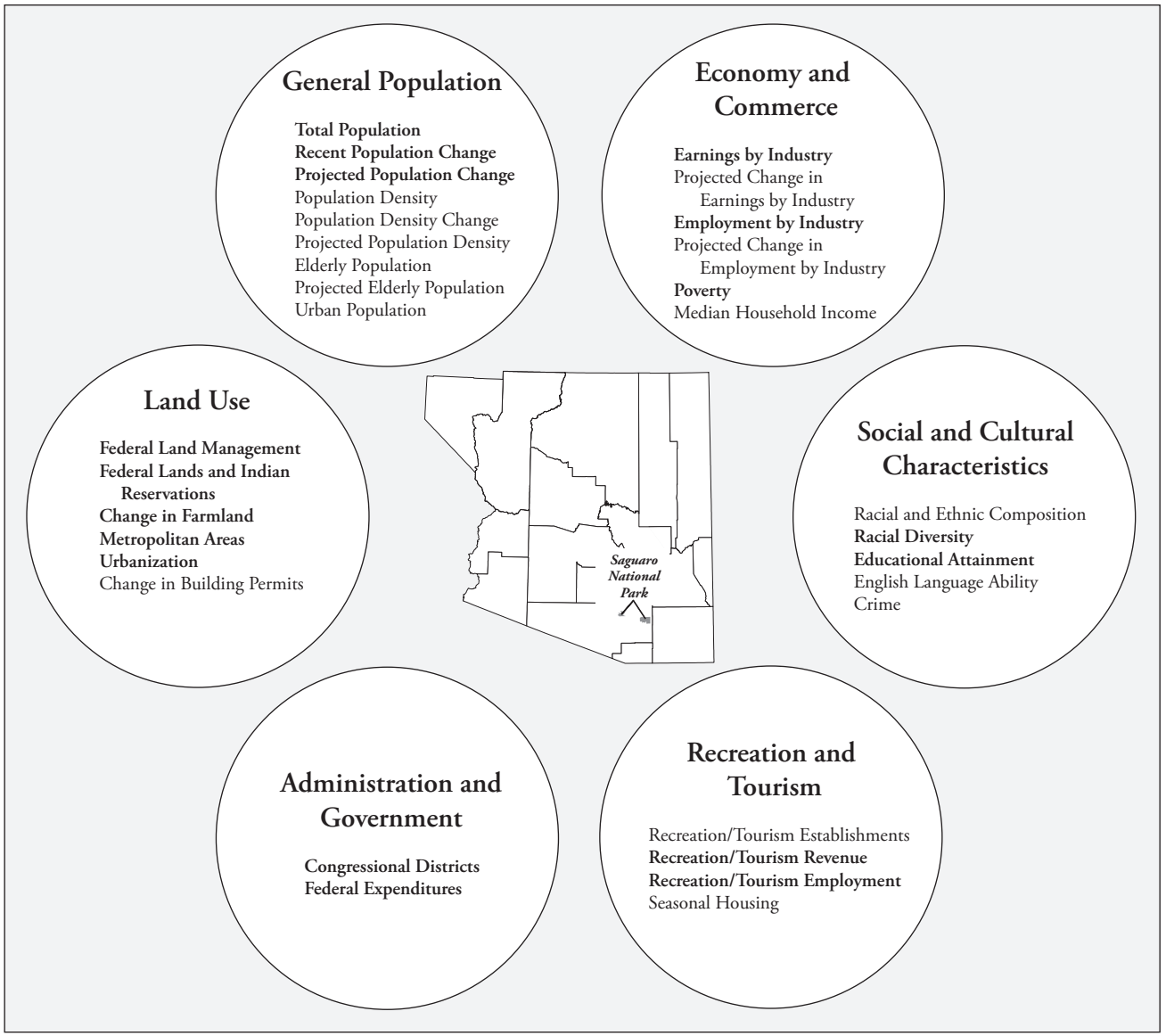


Figure 1. Indicators Included in this Atlas

core indicator additional indicator

The Region

In selecting the boundaries of the region of interest covered by this atlas, Saguaro NP staff were asked to define the geographic area that has the most significant impact on the park's management. Because the atlas relies on county-level socioeconomic data, the region of interest was restricted to entire counties, rather than parts of counties. The region selected includes the southern most county in Nevada (Clark) and all counties in Arizona. The map on the facing page depicts the region in its larger context.

Saguaro National Park is situated in the eastern portion of the extremely diverse and lush Sonoran Desert, which extends from northern Mexico into southern Arizona. The park consists of two districts adjacent to Tucson – the Rincon Mountain District to the east and the Tucson Mountain District to the west. The park is located approximately 370 miles southeast of Las Vegas, 211 miles south of Flagstaff, and 115 miles south of Phoenix. The Saguaro NP region is characterized by great diversity in its landscape and people. The region's arid climate makes water a critical resource. Year-round warmth and diverse topography make the region a recreation and retirement destination as well.

Ecologically, the Sonoran Desert is characterized by two rainy seasons – gentle, widespread rains in the winter and strong, localized thunderstorms in the summer. This rainfall pattern supports great diversity in vegetation and wildlife, and makes the Sonoran Desert the most densely vegetated of all the North American deserts. The park falls within the Basin and Range geographic province, which is characterized by steep mountains interspersed among flat, sediment-filled valleys. Elevations within the park range from 2,400 to 8,660 feet above sea level. Saguaros and other desert-adapted plants, such as palo verde trees, grow at the lower elevations. At higher elevations, desert grassland, evergreen oak woodland, pine forest, and mixed conifer forest vegetation communities are present, which are typical of all of Arizona's "Sky Island" mountain ranges. Water courses at all elevations contain important riparian areas, on which many plants and animals depend for survival.

In the northeastern part of the region, white and American Indian people dominate the racial composition of the population. The Navajo and Hopi Indian Reservations are located here. In contrast, the population of the southern portion includes more people of Hispanic or Latino origin. The close proximity to Mexico has encouraged a large immigration of Hispanics into the American Southwest. Another form of immigration, the arrival of elderly and retired people, defines another characteristic of the region's population. Retirement-age people 55 years old and over are attracted to the warm winter climate found throughout Arizona. In 1990, 2% of Arizona's population was of retirement age. However, by 2000, the number had increased to 21%. Overall, the region has a diverse makeup not only in race but also in age.

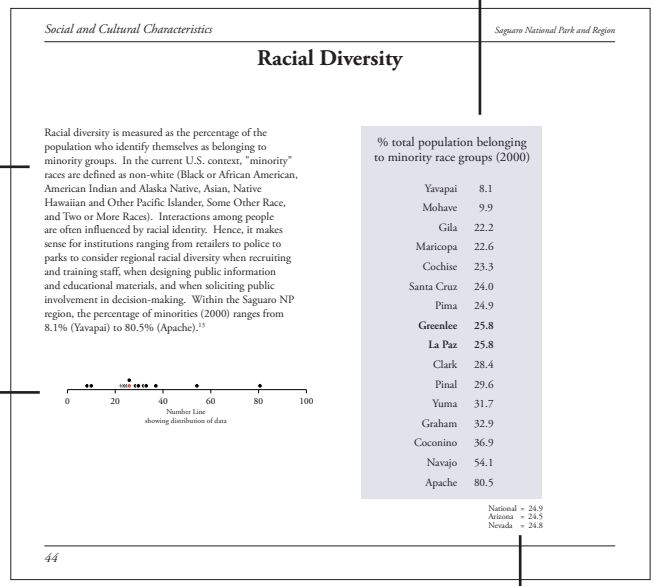
In addition to Saguaro NP, the region contains all or parts of numerous national park units, including Canyon de Chelly NM, Casa Grande Ruins NM, Chiricahua NM, Coronado NM, Glen Canyon NRA, Grand Canyon NP, Lake Mead NRA, Organ Pipe Cactus NM, Petrified Forest NP, Sunset Crater NM, and Tumacacori NHP.

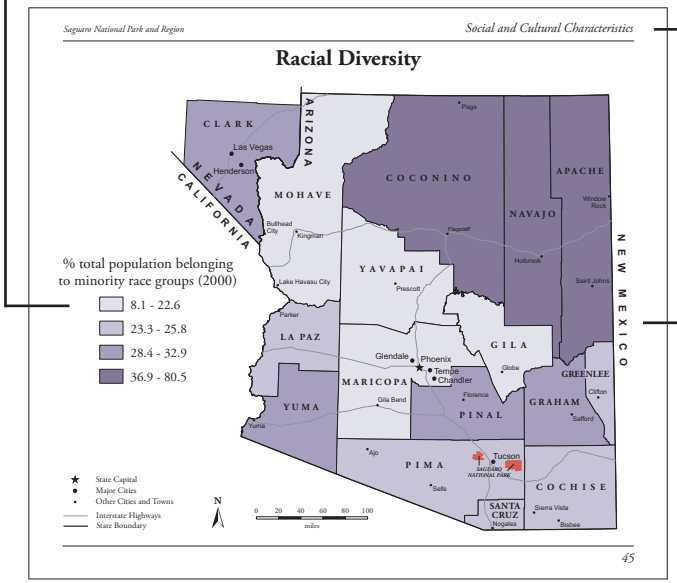
Saguaro National Park and its Region

Using the Socioeconomic Indicators and Maps

The socioeconomic indicators for the Saguaro National Park region of interest are presented in a series of maps. The best available county-level data are presented for each indicator. The following information is provided for each indicator:

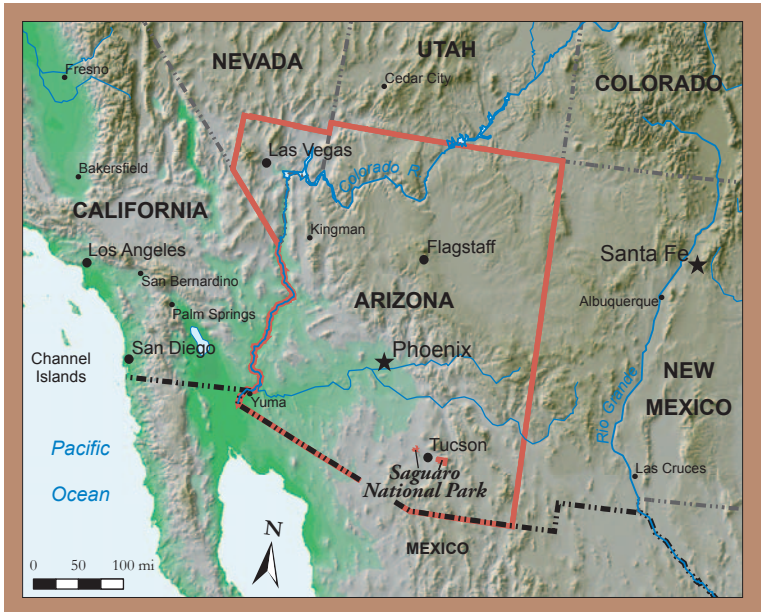
- a brief description of the socioeconomic indicator and an observation about the spatial variation in the data as displayed on the map.
- a table that shows the data and relative rank for each county. The median value is highlighted in bold. The table allows the reader to look up and compare specific indicator values for each county.
- a map legend describing how the indicator is measured, the year that the data were gathered, and the range of values for each quartile grouping.
- the name of the general category to which this particular indicator belongs (such as general population or land use). The same base color is used for all indicators in the same general category.





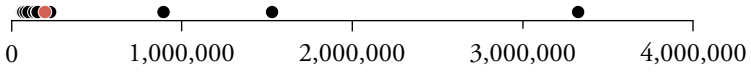
- a number line that shows the distribution of values for the indicator, useful in understanding patterns in the data. The median value is represented by a **red** dot.
- a section displaying national and state data that can be compared with regional county data.
- a map that displays general patterns inherent in the data. For most indicators, counties are grouped into four classes that correspond to four sub-ranges of data values. These groups are called quartiles. The highest-ranked quartile receives the darkest shading. For more information on quartile classification, see Appendix 2, page 83.

The Socioeconomic Indicators



Total Population

Population size is one of the most important influences on the character of human activities in a place and a key influence on resource use. People bring labor, knowledge, and economic activity to a place. At the same time, they generate demand for natural resources, goods, and services ranging from food to recreational opportunities. Within the Saguaro NP region, county population (2003) ranges from 8,708 (Greenlee) to 3,323,840 (Maricopa).[1]

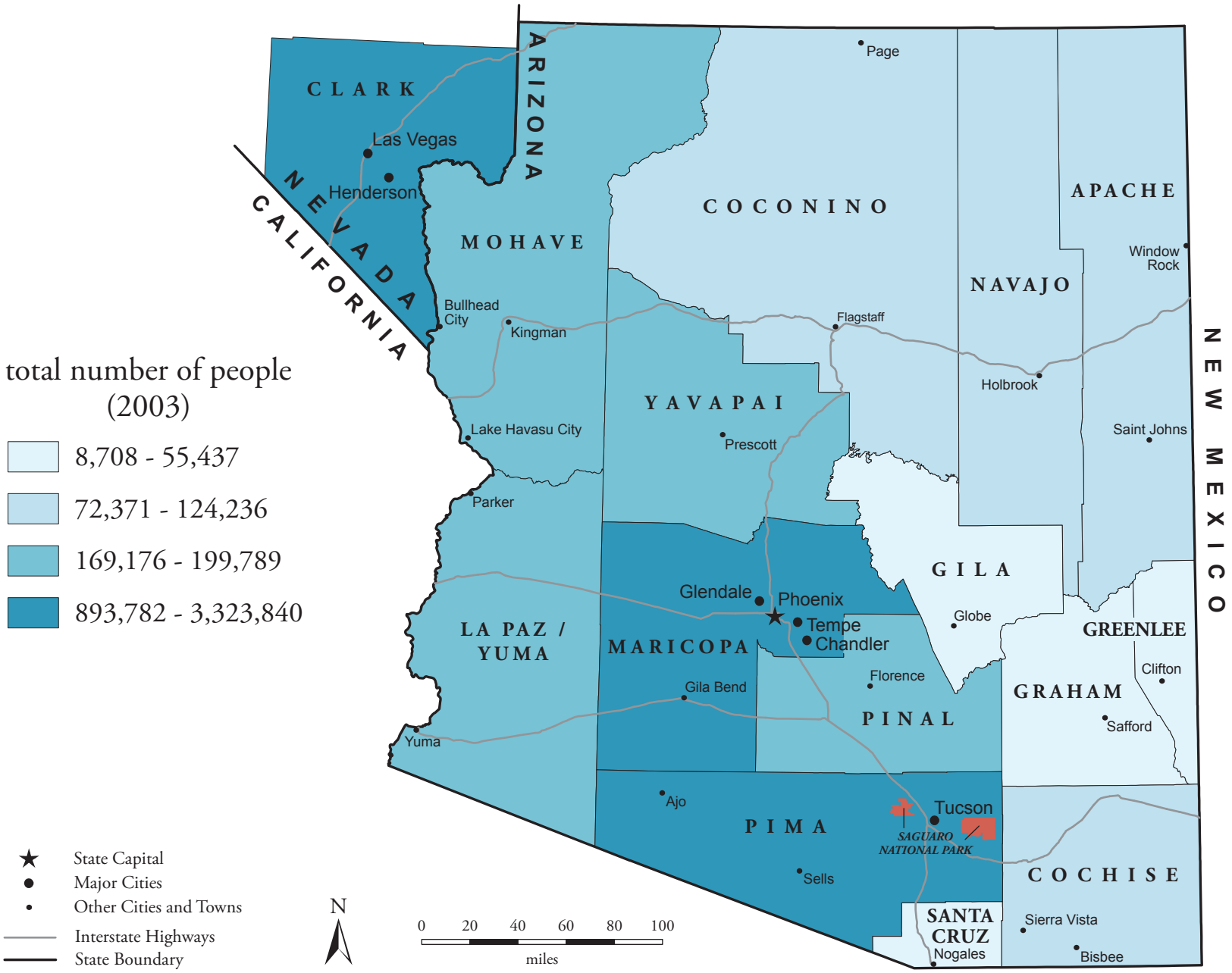


Number Line
showing distribution of data

total number of people (2003)	
Greenlee	8,708
Graham	36,155
Santa Cruz	40,326
Gila	55,437
Apache	72,371
Navajo	106,271
Coconino	121,470
Cochise	**124,236**
Mohave	169,176
Yavapai	187,515
La Paz/Yuma	191,047
Pinal	199,789
Pima	893,782
Clark	1,530,630
Maricopa	3,323,840

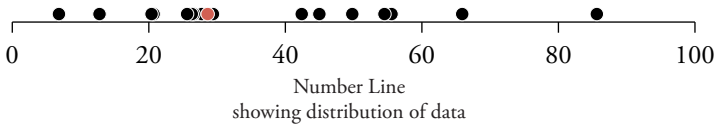
National = 290,459,299
Arizona = 5,530,123
Nevada = 2,191,997

Total Population



Recent Population Change

Measuring recent population change provides an indication of the extent to which population change is influencing current local or regional priorities. For example, population growth changes the tax base, adds new voters, and can increase demand for services ranging from schools to transportation to outdoor recreation. Within the Saguaro NP region, the recent increase in county population (1990 - 2000) ranges from 6.7% (Greenlee) to 85.5% (Clark).



Number Line
showing distribution of data

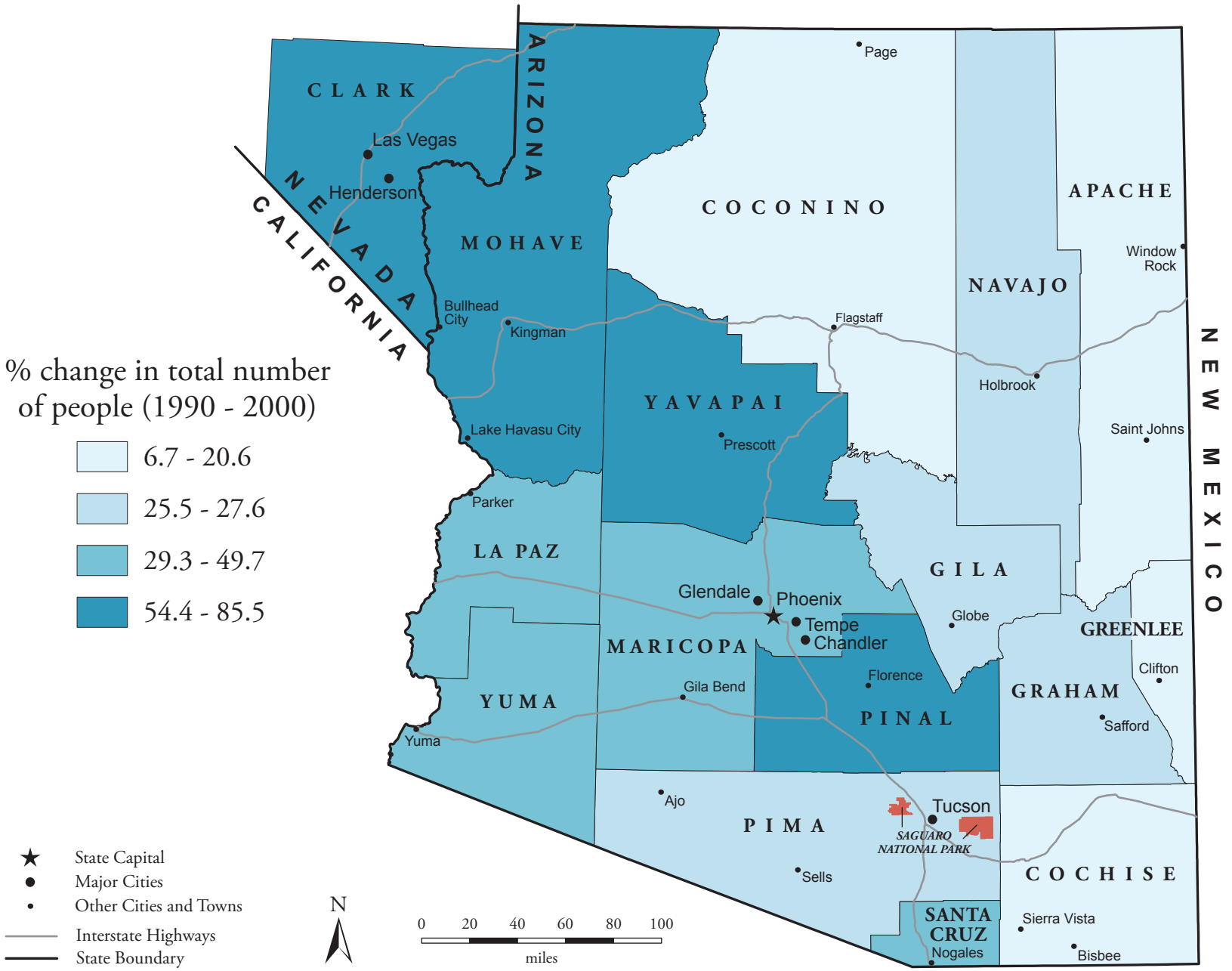
% change in total number of people (1990 - 2000)

Greenlee	6.7
Apache	12.7
Coconino	20.4
Cochise	20.6
Navajo	25.5
Graham	26.1
Pima	26.5
Gila	27.6
Santa Cruz	29.3
La Paz	42.4
Maricopa	44.8
Yuma	49.7
Pinal	54.4
Yavapai	55.5
Mohave	65.8
Clark	85.5

28.5

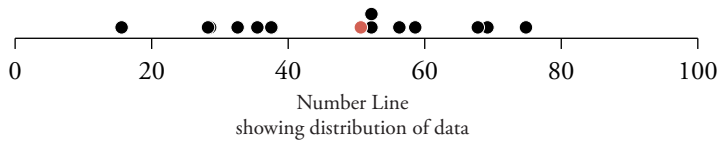
National = 13.2
Arizona = 40.0
Nevada = 66.3

Recent Population Change



Projected Population Change

Population projections can be made with some accuracy for short and mid-range time spans. Projections can help planners anticipate potential impacts on park resources. For example, population growth can generate changes in land use and transportation, growth of new and existing communities, and increases in the demand for park experiences. Within the Saguaro NP region, the projected increase in county population by the year 2020 ranges from 15.4% (Greenlee) to 74.7% (Yavapai).[2]



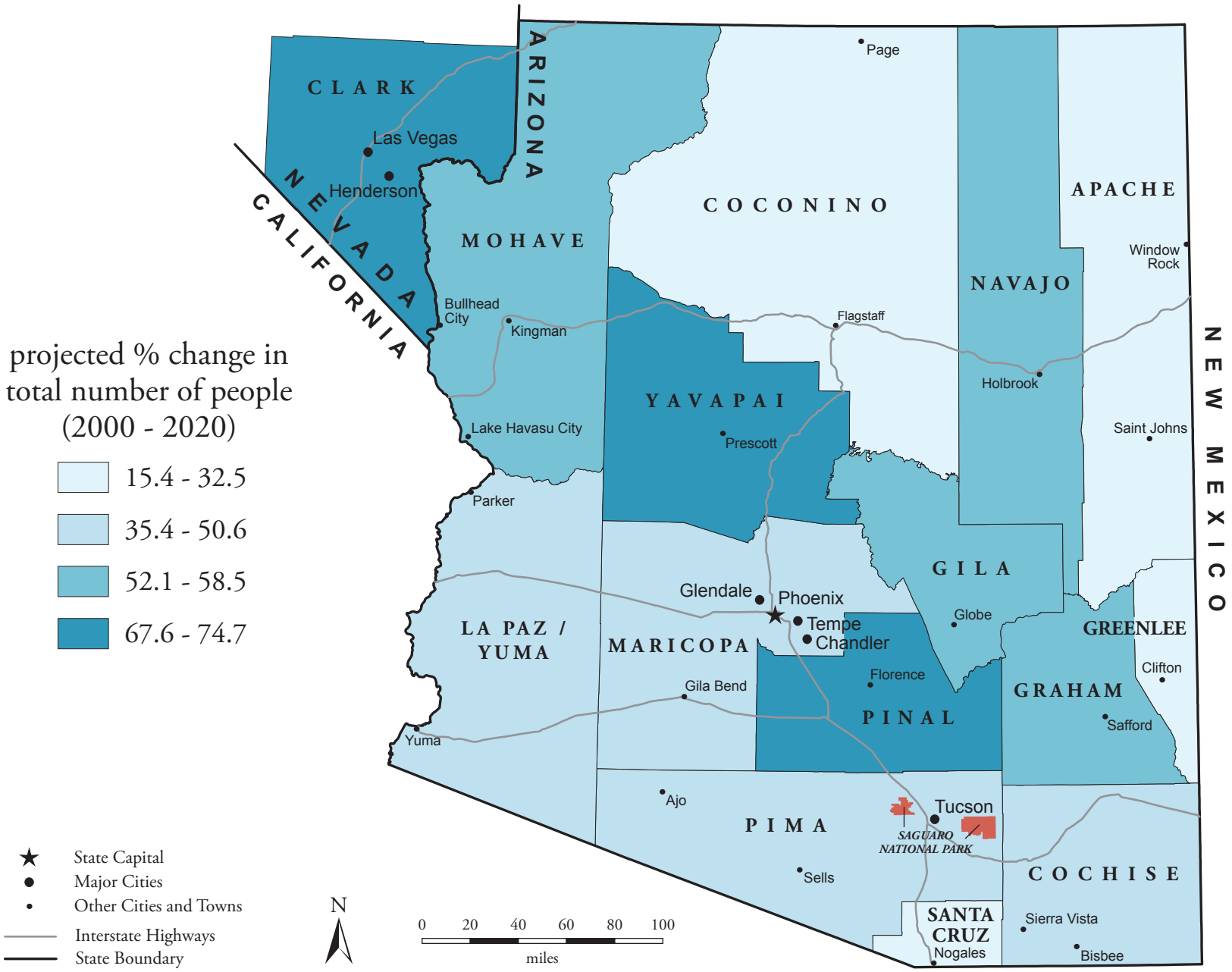
Number Line
showing distribution of data

projected % change in total number of people (2000 - 2020)

Greenlee	15.4
Coconino	28.3
Apache	28.5
Santa Cruz	32.5
Cochise	35.4
Pima	37.4
La Paz/Yuma	37.5
Maricopa	**50.6**
Gila	52.1
Graham	52.1
Mohave	56.1
Navajo	58.5
Clark	67.6
Pinal	69.0
Yavapai	74.7

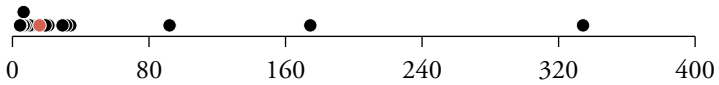
National = 21.1
Arizona = 48.4
Nevada = 58.6

Projected Population Change



Population Density

Population density is a measure of population in terms of persons per square mile. Higher concentrations of people tend to support more business activities and can generate greater demand for public goods ranging from roads to open space. Thus, monitoring differences in population density can be an important way to detect potential stresses and impacts on natural resources in the park region. Within the Saguaro NP region, county population density (2000) ranges from 4.4 people per square mile (La Paz) to 333.8 people per square mile (Maricopa).[3]

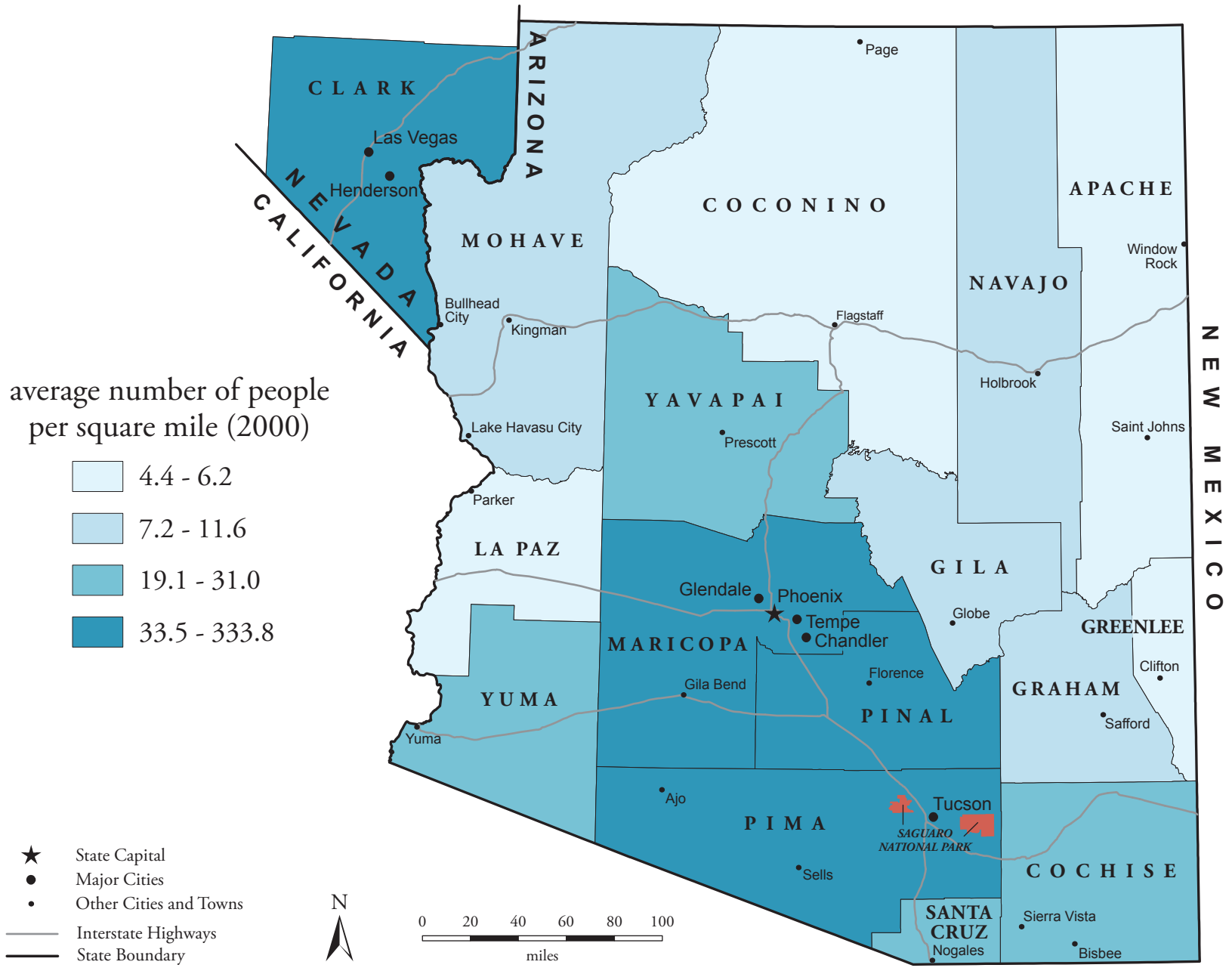


Number Line
showing distribution of data

average number of people per square mile (2000)	
La Paz	4.4
Greenlee	4.6
Apache	6.2
Coconino	6.2
Graham	7.2
Navajo	9.8
Gila	10.8
Mohave	11.6
Cochise	19.1 ← 15.4
Yavapai	20.6
Yuma	29.0
Santa Cruz	31.0
Pinal	33.5
Pima	91.8
Clark	173.9
Maricopa	333.8

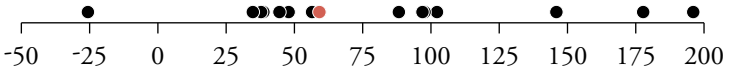
National = 79.6
Arizona = 45.1
Nevada = 18.2

Population Density



Population Density Change

Population density change is an alternate means to describe population growth, stability, or decline. Steady or decelerating growth over a 20-year time period suggests that government and institutions can anticipate and plan for needs in advance. Accelerating population growth may be placing stress on government and institutions to respond rapidly to changes in civic life, industry, infrastructure, and the use of land and resources. Within the Saguaro NP region, the change in county population density (1980 - 2000) ranges from -25.4% (Greenlee) to 195.7% (Clark).[4]



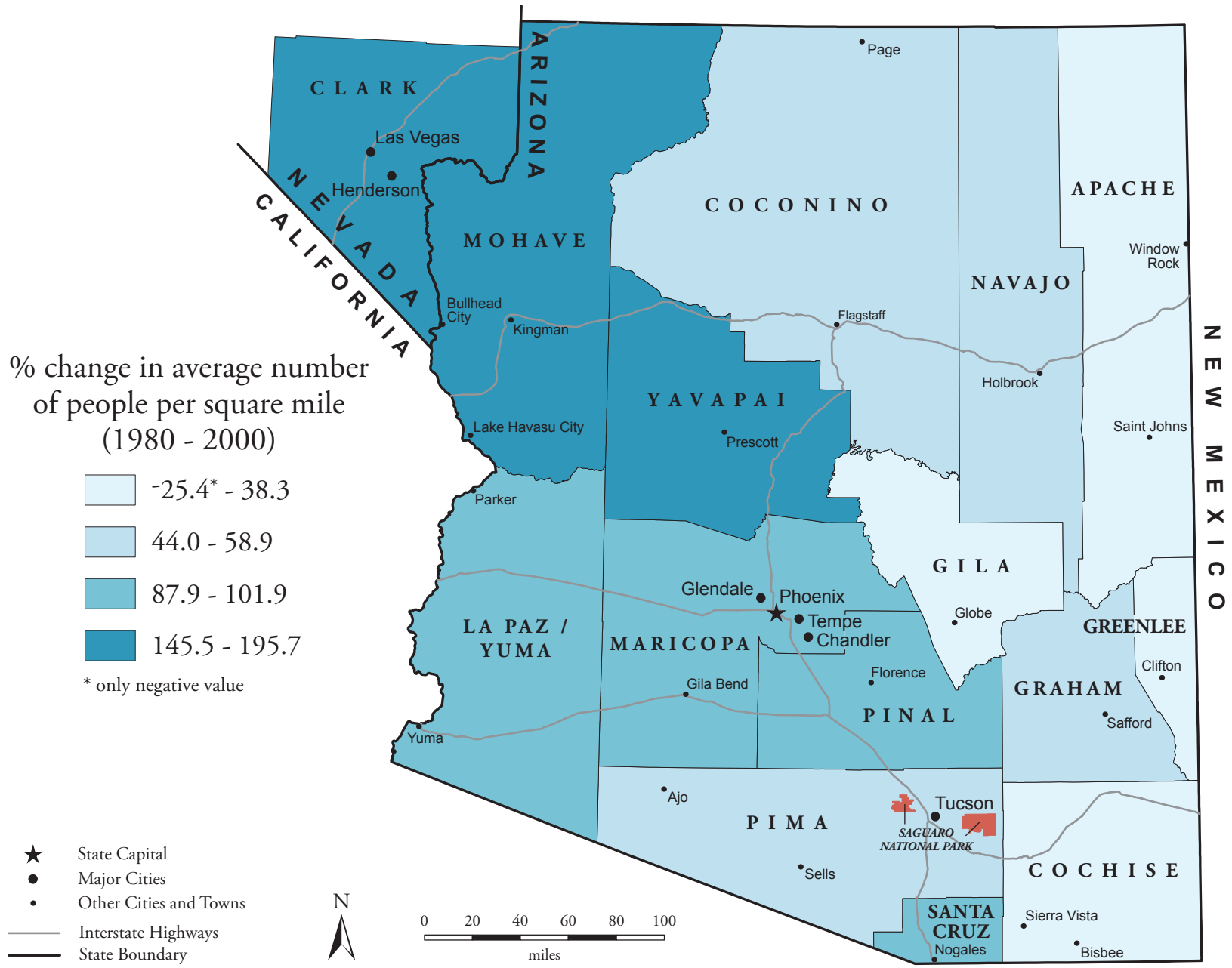
Number Line
showing distribution of data

% change in average number of people per square mile (1980 - 2000)

Greenlee	-25.4
Apache	34.7
Gila	38.0
Cochise	38.3
Navajo	44.0
Graham	47.6
Coconino	56.2
Pima	**58.9**
Santa Cruz	87.9
Pinal	96.9
La Paz/Yuma	97.2
Maricopa	101.9
Yavapai	145.5
Mohave	177.3
Clark	195.7

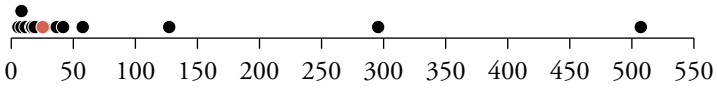
National = 24.3
Arizona = 88.7
Nevada = 149.3

Population Density Change



Projected Population Density

Population density projections are based on population projections. Future regional variations in county population density suggest variations in how counties will approach decisions about natural resource-related issues such as transportation, zoning, and water supply. Significantly increased population density can generate rising land costs as well as increased demand for open space to be used for recreation or conservation. Within the Saguaro NP region, projected county population density for the year 2020 ranges from 5.3 people per square mile (Greenlee) to 506.5 people per square mile (Maricopa).[5]



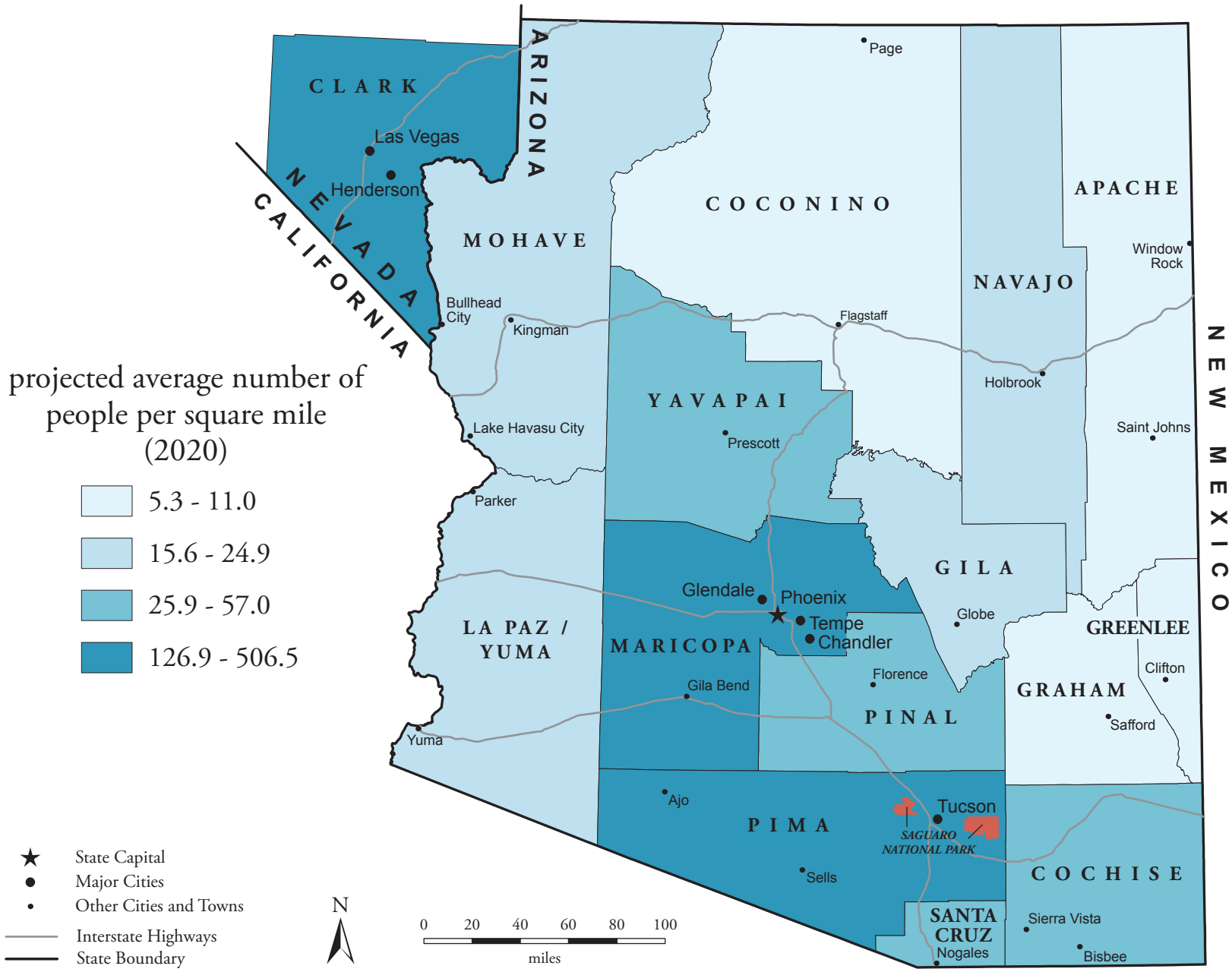
Number Line
showing distribution of data

projected average number of people per square mile (2020)

Greenlee	5.3
Apache	8.0
Coconino	8.0
Graham	11.0
Navajo	15.6
Gila	16.4
Mohave	18.3
La Paz/Yuma	**24.9**
Cochise	25.9
Yavapai	36.3
Santa Cruz	41.3
Pinal	57.0
Pima	126.9
Clark	295.0
Maricopa	506.5

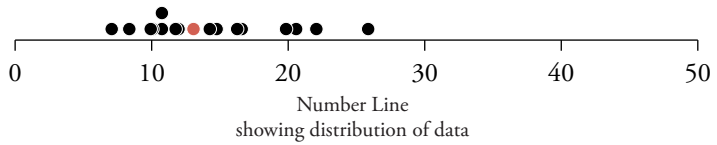
National = 96.6
Arizona = 67.5
Nevada = 29.1

Projected Population Density



Elderly Population

The size of a county's elderly population is measured as the percentage of its residents who are 65 years old and over. In counties with a higher percentage of older people, there may be a higher demand for health care and recreational activities more suited to the elderly. There may also be a net inflow of dollars into the local economy in the form of medical, retirement, and disability payments. Aspects of civic life ranging from volunteerism to political participation may also be influenced by the size of the elderly population. The needs and interests of the regional elderly population can influence park management in many ways, including design of facilities, development of interpretive programs, recruitment of volunteers, and visitor use schedules and preferences. Within the Saguaro NP region, the percentage of county residents 65 years old and over (2000) ranges from 7.0% (Coconino) to 25.8% (La Paz).



Number Line
showing distribution of data

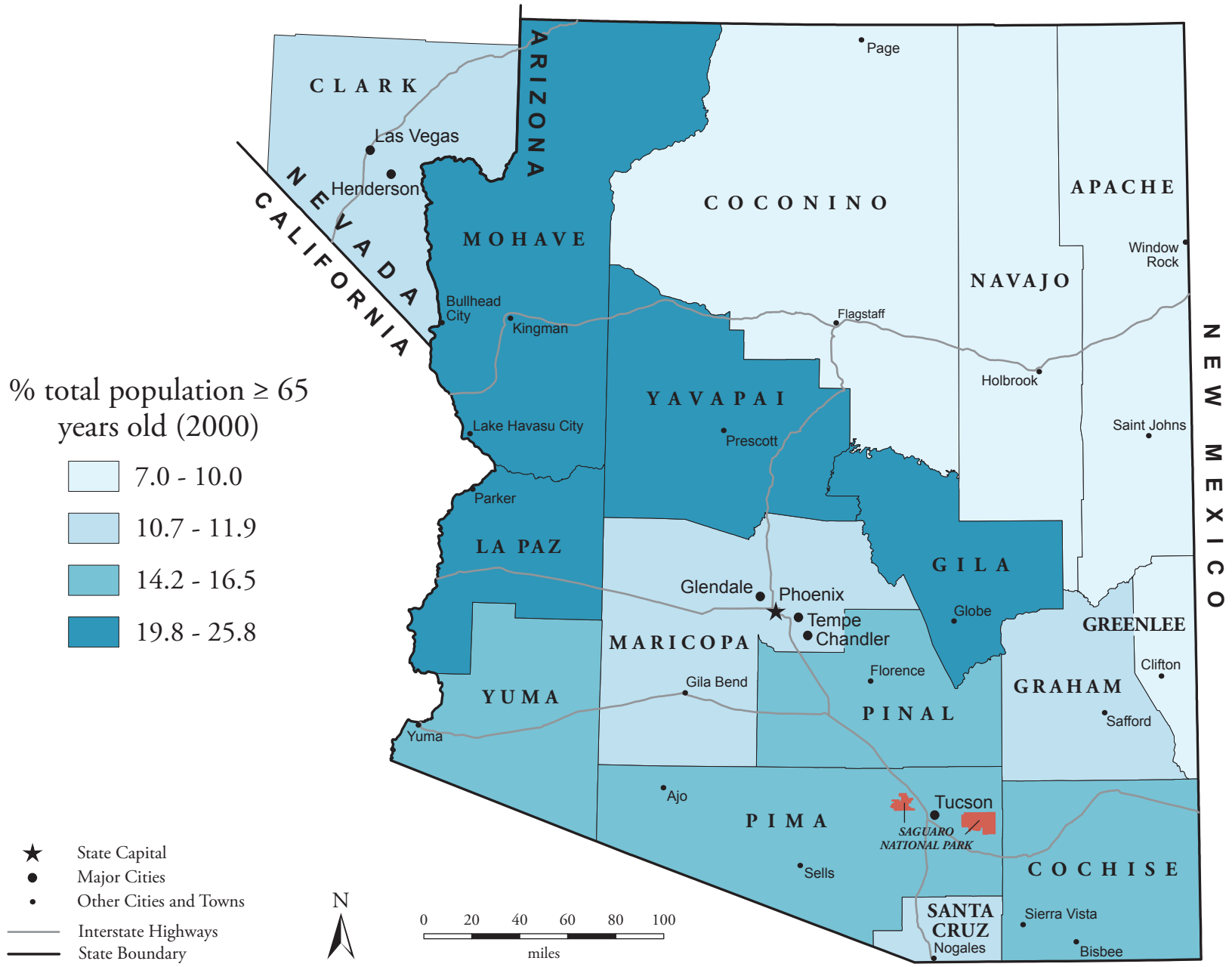
% total population ≥ 65 years old (2000)

Coconino	7.0
Apache	8.3
Greenlee	9.9
Navajo	10.0
Clark	10.7
Santa Cruz	10.7
Maricopa	11.7
Graham	11.9
Pima	14.2
Cochise	14.7
Pinal	16.2
Yuma	16.5
Gila	19.8
Mohave	20.5
Yavapai	22.0
La Paz	25.8

13.0

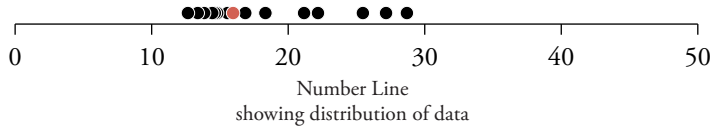
National = 12.4
Arizona = 13.0
Nevada = 11.0

Elderly Population



Projected Elderly Population

Changes in the percent of the population who are 65 years old and over are projected from recent population data. A variety of factors can lead to increases in the population of elderly residents, including increased longevity due to changes in health care, out-migration by younger people for employment or education, or in-migration by retirees. Planning for increases in an elderly population may include changes in facility design and an expansion of programs that suit the needs and interests of elderly visitors and volunteers. Within the Saguaro NP region, the projected percentage of county residents 65 years old and over (2020) ranges from 12.6% (Apache) to 28.6% (Yavapai).

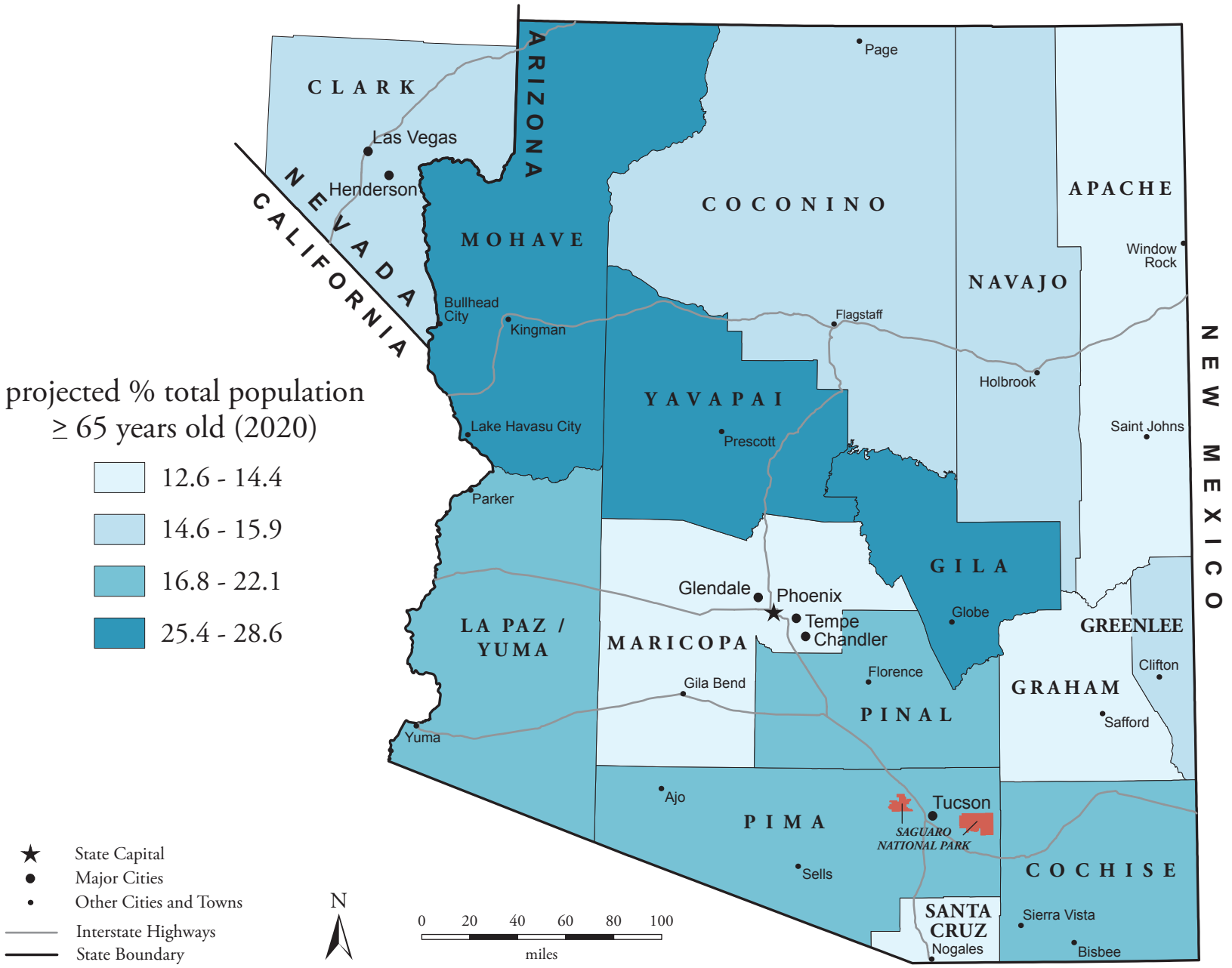


Number Line
showing distribution of data

projected % total population ≥ 65 years old (2020)	
Apache	12.6
Santa Cruz	13.3
Graham	13.8
Maricopa	14.4
Coconino	14.6
Greenlee	14.8
Clark	15.5
Navajo	**15.9**
La Paz/Yuma	16.8
Pima	18.3
Cochise	21.1
Pinal	22.1
Mohave	25.4
Gila	27.1
Yavapai	28.6

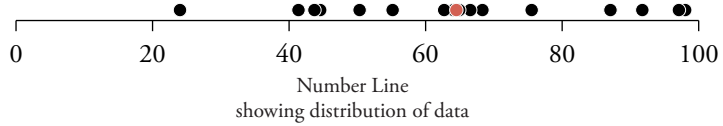
National = 16.0
Arizona = 16.6
Nevada = 16.1

Projected Elderly Population



Urban Population

The relative proportion of urban dwellers within counties in the park region can be significant in addressing regional issues related to park management. Urban dwellers may have easier access to schools, stores, and medical service. They may also benefit from a greater array of public services such as water utilities and municipal police protection. These and many other characteristics can generate differences in urban and rural strategies for dealing with issues such as taxation, development, and environmental protection. Within the Saguaro NP region, the percent of the county population living in urban areas (2000) ranges from 23.9% (Apache) to 97.7% (Clark).[6]



Number Line
showing distribution of data

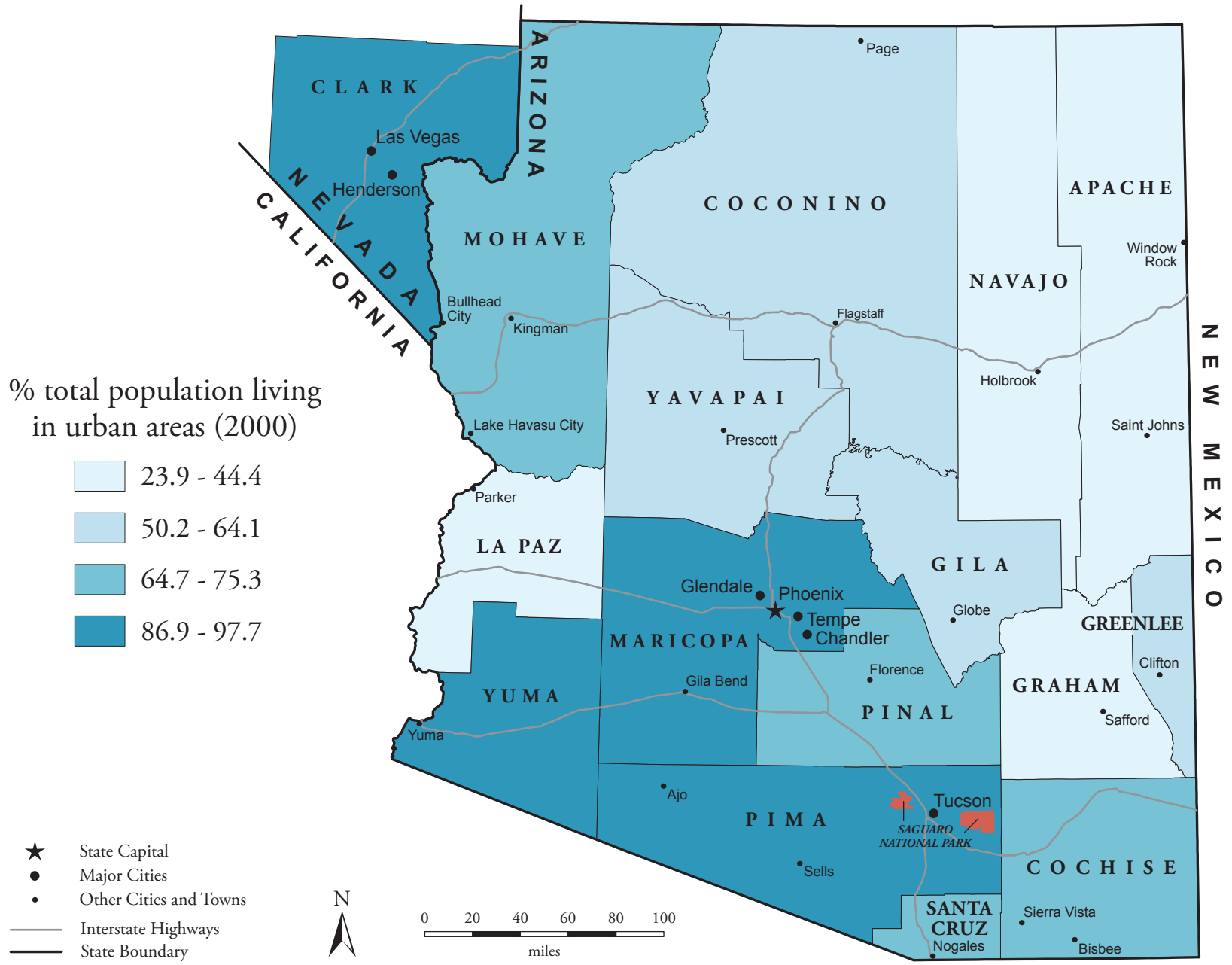
% total population living in urban areas (2000)

Apache	23.9
Navajo	41.3
La Paz	43.7
Graham	44.4
Greenlee	50.2
Gila	55.1
Yavapai	62.7
Coconino	64.1
Pinal	64.7
Cochise	66.4
Santa Cruz	68.1
Mohave	75.3
Yuma	86.9
Pima	91.6
Maricopa	97.1
Clark	97.7

64.4

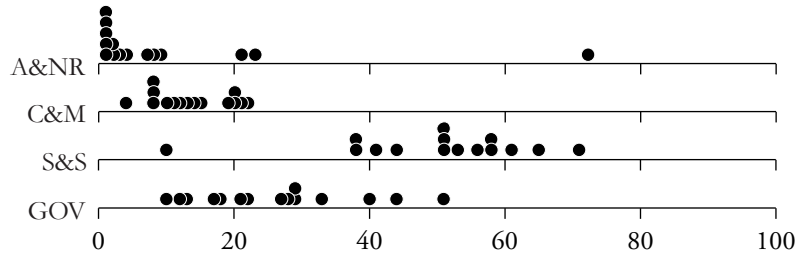
National = 79.0
Arizona = 88.2
Nevada = 91.5

Urban Population



Earnings by Industry

Earnings by industry are indicative of the overall size of a local economy as well as the relative importance of each major industrial sector within that economy. The diversity of economic activities in the region presents an array of challenges to park management. For example, relatively mobile industries such as light manufacturing or financial services may be concerned with land costs and tax rates, whereas natural resource dependent industries such as farming or mining may be concerned with land use regulations and other environmental policies. Within the Saguaro NP region (1999), the leading sector of earnings in 13 of the 15 counties is sales and services. The second-ranking sector is the government.[7]



Number Line
showing distribution of data

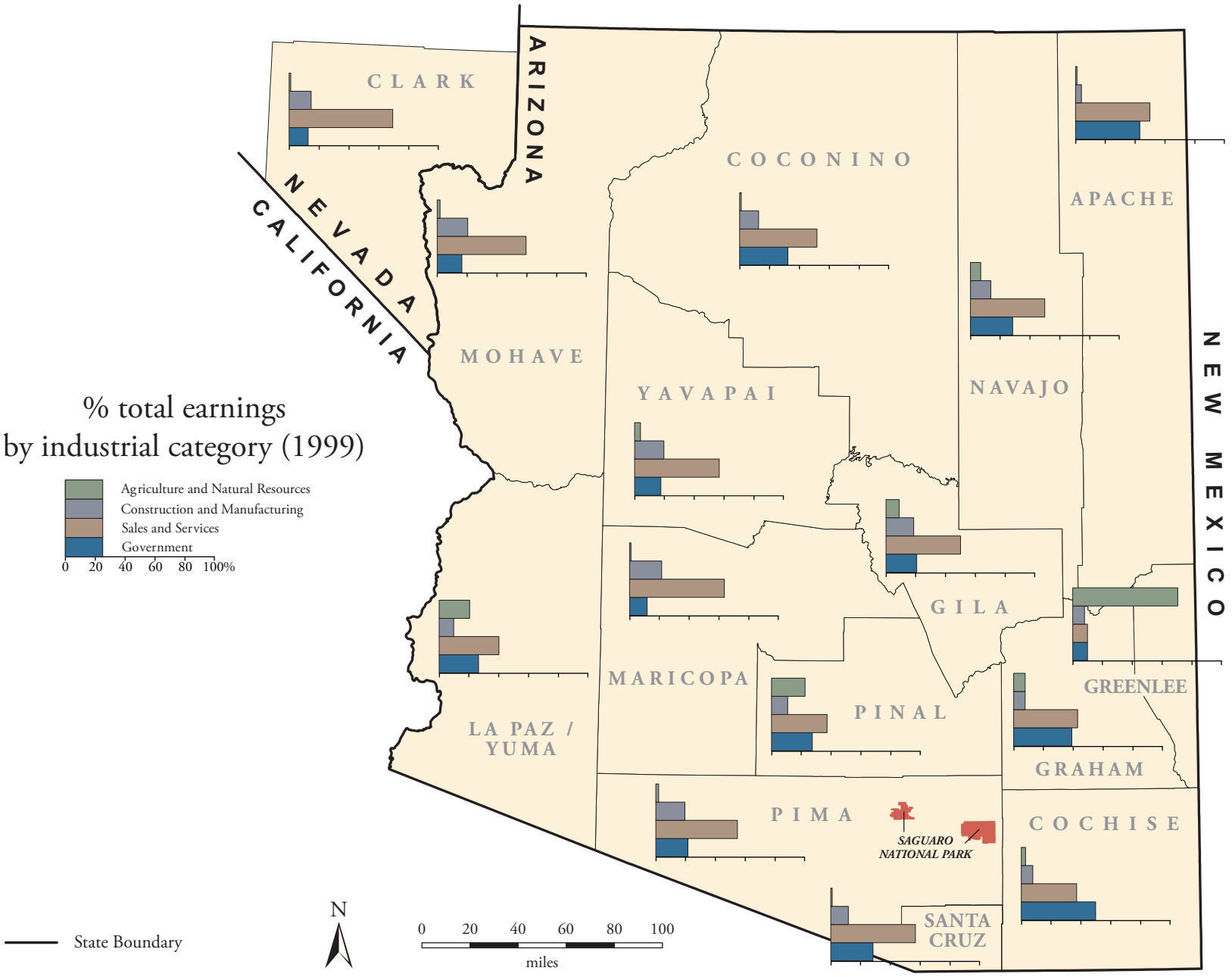
A&NR = Agriculture and Natural Resources
C&M = Construction and Manufacturing
S&S = Sales and Services
GOV = Government

Percentages may not add to one hundred due to rounding.

% total earnings
by industrial category (1999)

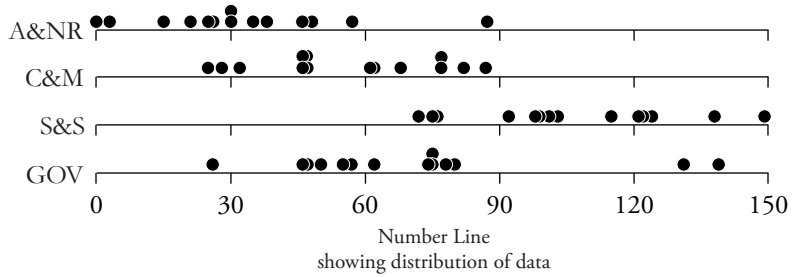
	A&NR	C&M	S&S	GOV
Apache	1	4	51	44
Clark	1	15	71	13
Cochise	3	8	38	51
Coconino	1	13	53	33
Gila	9	19	51	21
Graham	8	8	44	40
Greenlee	72	8	10	10
La Paz/Yuma	21	10	41	27
Maricopa	1	22	65	12
Mohave	2	21	61	17
Navajo	7	14	51	29
Pima	2	20	56	22
Pinal	23	11	38	28
Santa Cruz	1	12	58	29
Yavapai	4	20	58	18
National	2	22	60	16
Arizona	3	20	61	16
Nevada	3	15	68	14

Earnings by Industry



Projected Change in Earnings by Industry

Projected change in earnings by industry may be indicative of growth, stability, or decline in specific sectors of the local economy in each county. Such projections may serve as an early predictor of localized economic restructuring. Different economic activities within the region present an array of challenges to park management. Monitoring trends in the relative stability of these economic activities can assist park managers in being responsive to change. Within the Saguaro NP region (2000-2020), the sales and services sectors shows the largest projected increase in 11 of the 15 counties.[8]



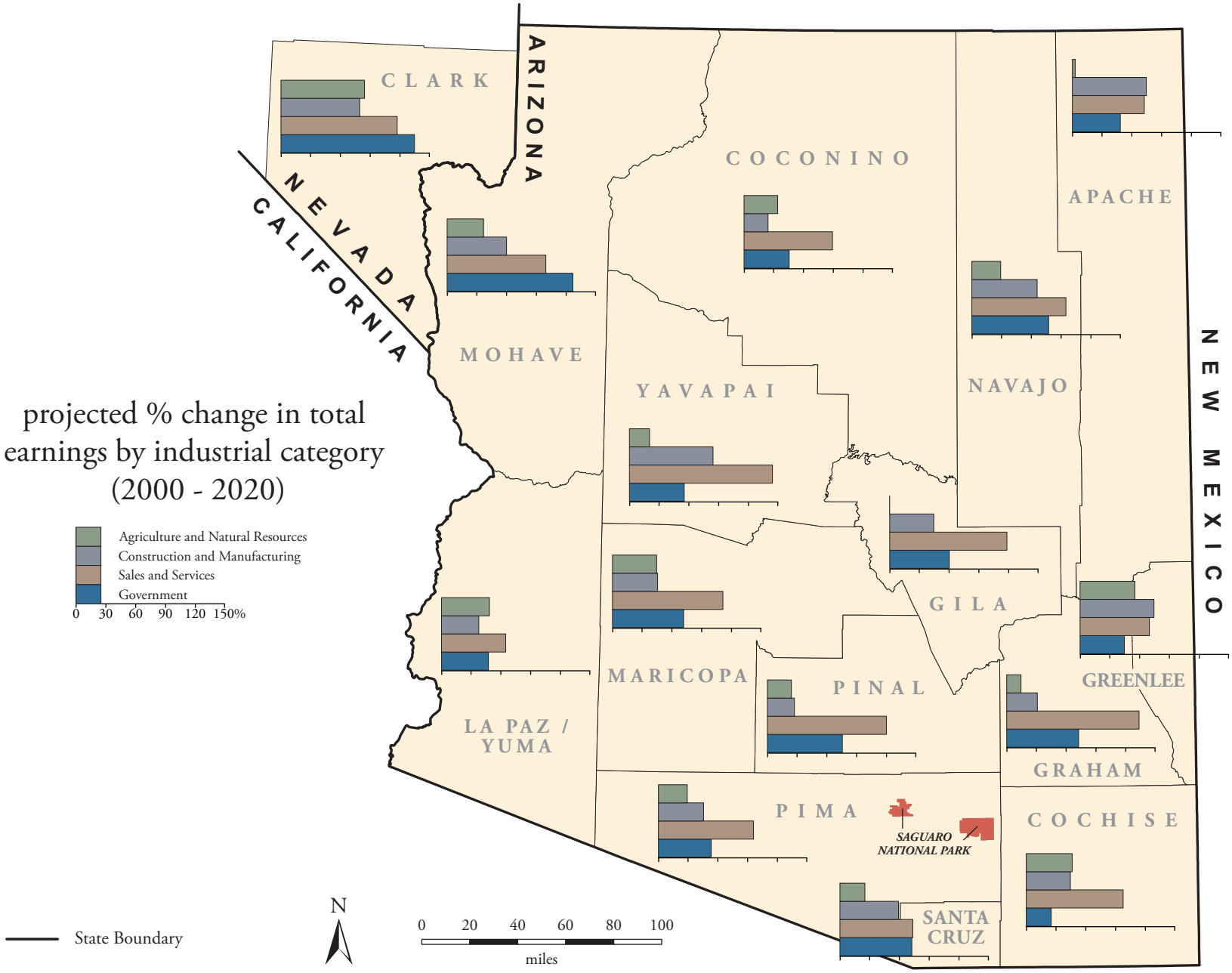
Number Line
showing distribution of data

A&NR = Agriculture and Natural Resources
C&M = Construction and Manufacturing
S&S = Sales and Services
GOV = Government

projected % change in total earnings
by industrial category
(2000 - 2020)

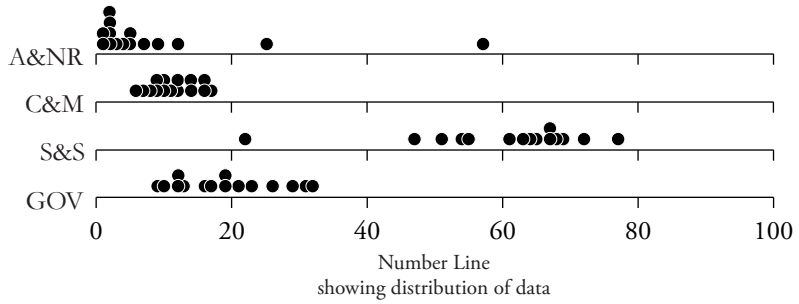
	A&NR	C&M	S&S	GOV
Apache	3	77	75	50
Clark	87	82	121	139
Cochise	48	46	101	26
Coconino	35	25	92	47
Gila	0	46	122	62
Graham	15	32	138	75
Greenlee	57	77	72	46
La Paz/Yuma	50	39	67	49
Maricopa	46	47	115	74
Mohave	38	62	103	131
Navajo	30	68	98	80
Pima	30	47	99	55
Pinal	25	28	124	78
Santa Cruz	26	61	76	75
Yavapai	21	87	149	57
National	38	29	63	39
Arizona	39	47	112	66
Nevada	62	76	109	105

Projected Change in Earnings by Industry



Employment by Industry

One indicator of the way a particular county's job market is structured is the percentage of workers employed in each of the four major industrial sectors. This employment distribution is indicative of the kinds of skills, knowledge, and concerns that are most prevalent among workers. Occupational patterns can influence people's priorities and actions with regard to parks and resource protection. For example, construction workers might welcome the prospect of rapid growth, whereas government workers such as teachers and police might worry that rapid growth would stress existing government resources. Within the Saguaro NP region (1999), the leading sector of employment in 14 of the 15 counties is sales and services. The second-ranking sector varies from county to county.[9]



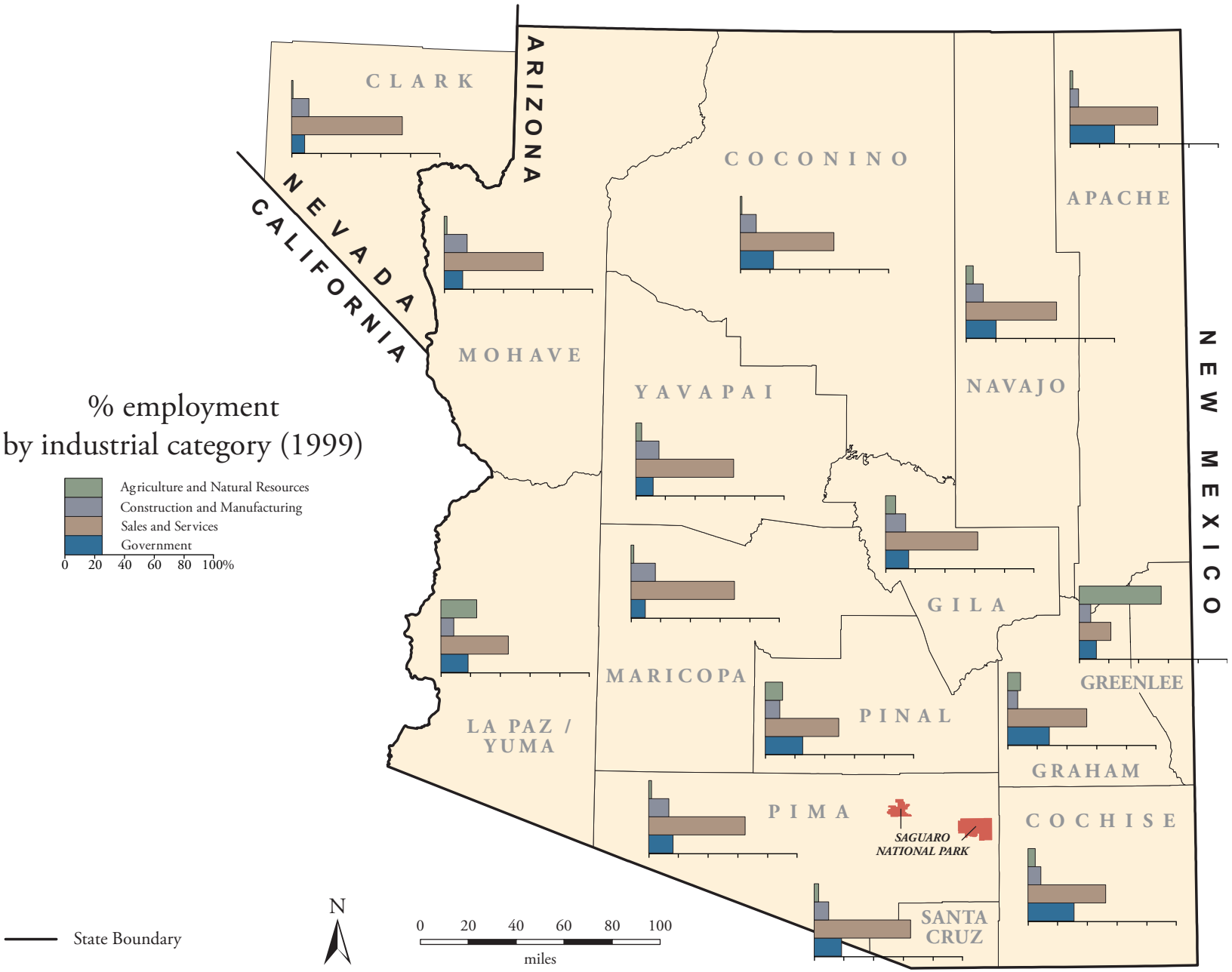
A&NR = Agriculture and Natural Resources
C&M = Construction and Manufacturing
S&S = Sales and Services
GOV = Government

Percentages may not add to one hundred due to rounding.

% employment
by industrial category (1999)

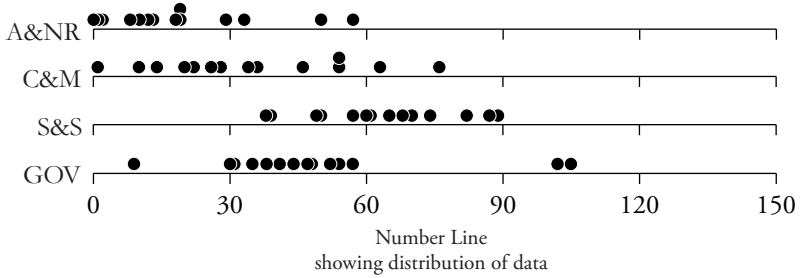
	A&NR	C&M	S&S	GOV
Apache	2	6	61	31
Clark	1	12	77	9
Cochise	5	9	54	32
Coconino	1	11	65	23
Gila	7	14	64	16
Graham	9	7	55	29
Greenlee	57	8	22	12
La Paz/Yuma	25	9	47	19
Maricopa	2	17	72	10
Mohave	2	16	69	13
Navajo	5	12	63	21
Pima	2	14	67	17
Pinal	12	10	51	26
Santa Cruz	3	10	67	19
Yavapai	4	16	68	12
National	4	17	65	14
Arizona	3	15	69	13
Nevada	3	12	75	10

Employment by Industry



Projected Change in Employment by Industry

Jobs in the four industrial sectors are in a constant state of flux. A projected decline or increase in a certain industrial sector may show which skills could be in demand at a future date. This could lead to a change in migration patterns in the counties around the park as new people arrive to take advantage of the new employment opportunities. Within the Saguaro NP region (2000 - 2020), 11 of the 15 counties show the greatest projected increase in sales and services.[10]



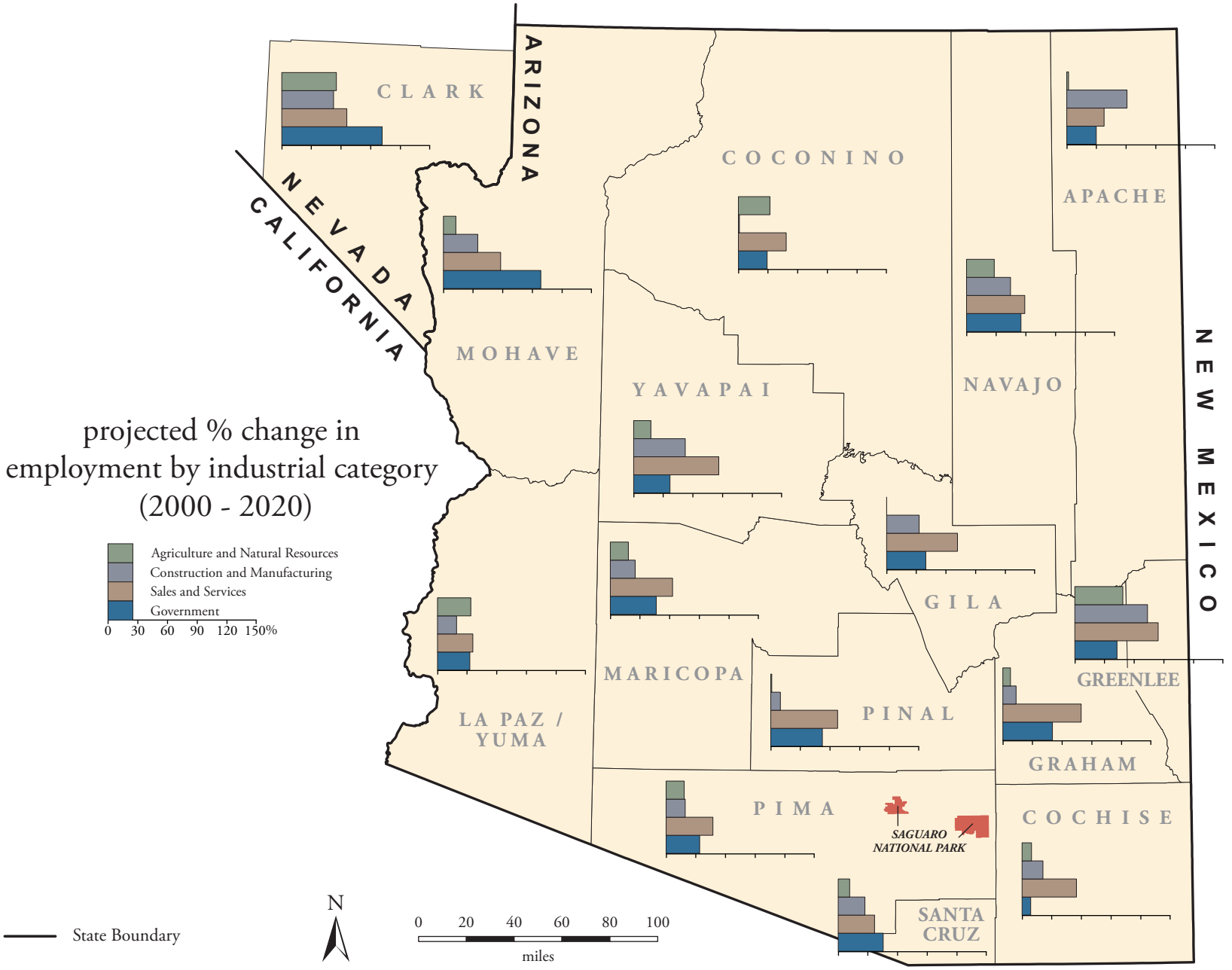
Number Line
showing distribution of data

A&NR = Agriculture and Natural Resources
C&M = Construction and Manufacturing
S&S = Sales and Services
GOV = Government

projected % change in employment
by industrial category
(2000 - 2020)

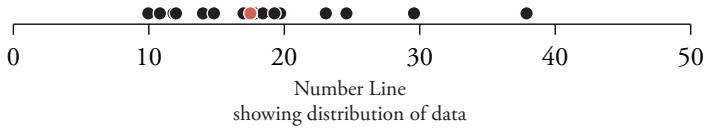
	A&NR	C&M	S&S	GOV
Apache	2	63	39	31
Clark	57	54	68	105
Cochise	10	22	57	9
Coconino	33	1	50	30
Gila	0	34	74	41
Graham	8	14	82	52
Greenlee	50	76	87	44
La Paz/Yuma	35	20	37	34
Maricopa	19	26	65	48
Mohave	13	36	60	102
Navajo	29	46	61	57
Pima	19	20	49	35
Pinal	1	10	70	54
Santa Cruz	12	28	38	47
Yavapai	18	54	89	38
National	8	10	33	23
Arizona	22	26	62	43
Nevada	42	49	60	76

Projected Change in Employment by Industry



Poverty

Poverty is officially defined as the condition of living in a household with income below the federally-determined poverty threshold ($17,029 in 1999 for a family of four people). The extent of poverty can be measured as the percentage of the total population living below that threshold. Those living in poverty can face such difficulties as finding adequate housing and health care, getting enough food, and reaching job sites and government services, including parks. The level of poverty in the park region necessarily becomes significant to park management decisions and priorities. Within the Saguaro NP region, the incidence of poverty (1999) ranges from 9.9% (Greenlee) to 37.8% (Apache).[11]



Number Line
showing distribution of data

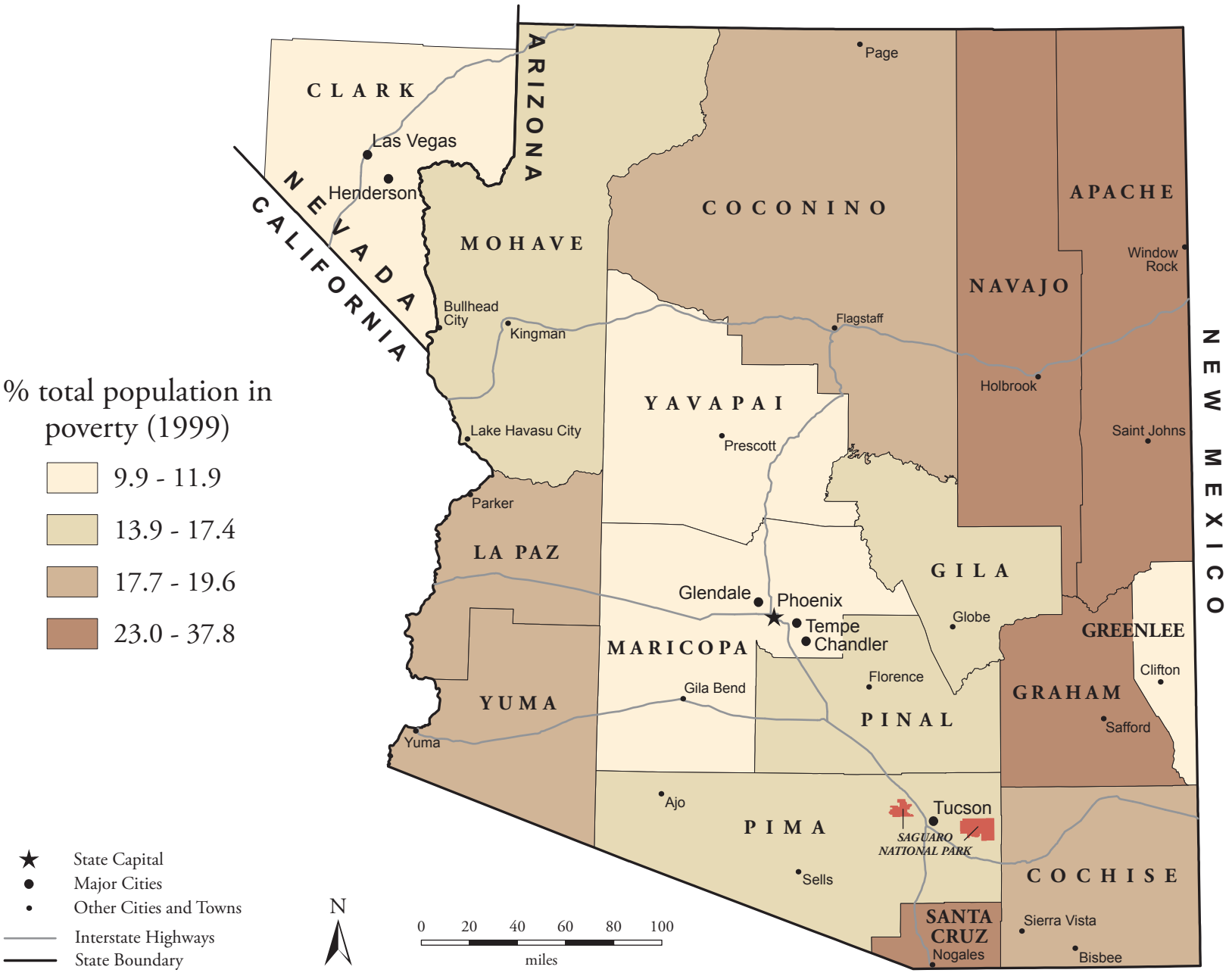
% total population in poverty (1999)

Greenlee	9.9
Clark	10.8
Maricopa	11.7
Yavapai	11.9
Mohave	13.9
Pima	14.7
Pinal	16.9
Gila	17.4
Cochise	17.7
Coconino	18.2
Yuma	19.2
La Paz	19.6
Graham	23.0
Santa Cruz	24.5
Navajo	29.5
Apache	37.8

17.6

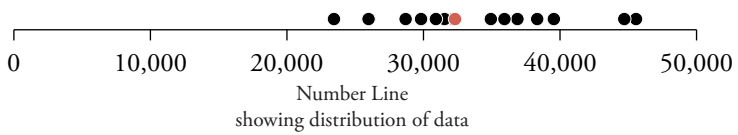
National = 12.4
Arizona = 19.1
Nevada = 11.0

Poverty


% total population in poverty (1999)
9.9 - 11.9
13.9 - 17.4
17.7 - 19.6
23.0 - 37.8
State Capital
Major Cities
Other Cities and Towns
Interstate Highways
State Boundary
N
0 20 40 60 80 100
miles
ARIZONA
NEVADA
CALIFORNIA
NEW MEXICO
CLARK
MOHAVE
COCONINO
APACHE
NAVAJO
YAVAPAI
GILA
LA PAZ
YUMA
MARICOPA
PINAL
PIMA
GREENLEE
GRAHAM
COCHISE
SANTA CRUZ
Las Vegas
Henderson
Bullhead City
Kingman
Lake Havasu City
Parker
Yuma
Page
Window Rock
Flagstaff
Holbrook
Saint Johns
Prescott
Glendale
Phoenix
Tempe
Chandler
Globe
Florence
Gila Bend
Clifton
Safford
Ajo
Tucson
SAGUARO NATIONAL PARK
Sells
Sierra Vista
Bisbee
Nogales

Median Household Income

Median household income is indicative of the general level of income among households in a county. The median value is the central value in a ranked dataset, with an equal number of observations both above and below the median. General income measures can provide insights into the opportunities and time available for recreation in the park region. Within the Saguaro NP region, median household income (1999) ranges from $23,344 (Apache) to $45,358 (Maricopa).



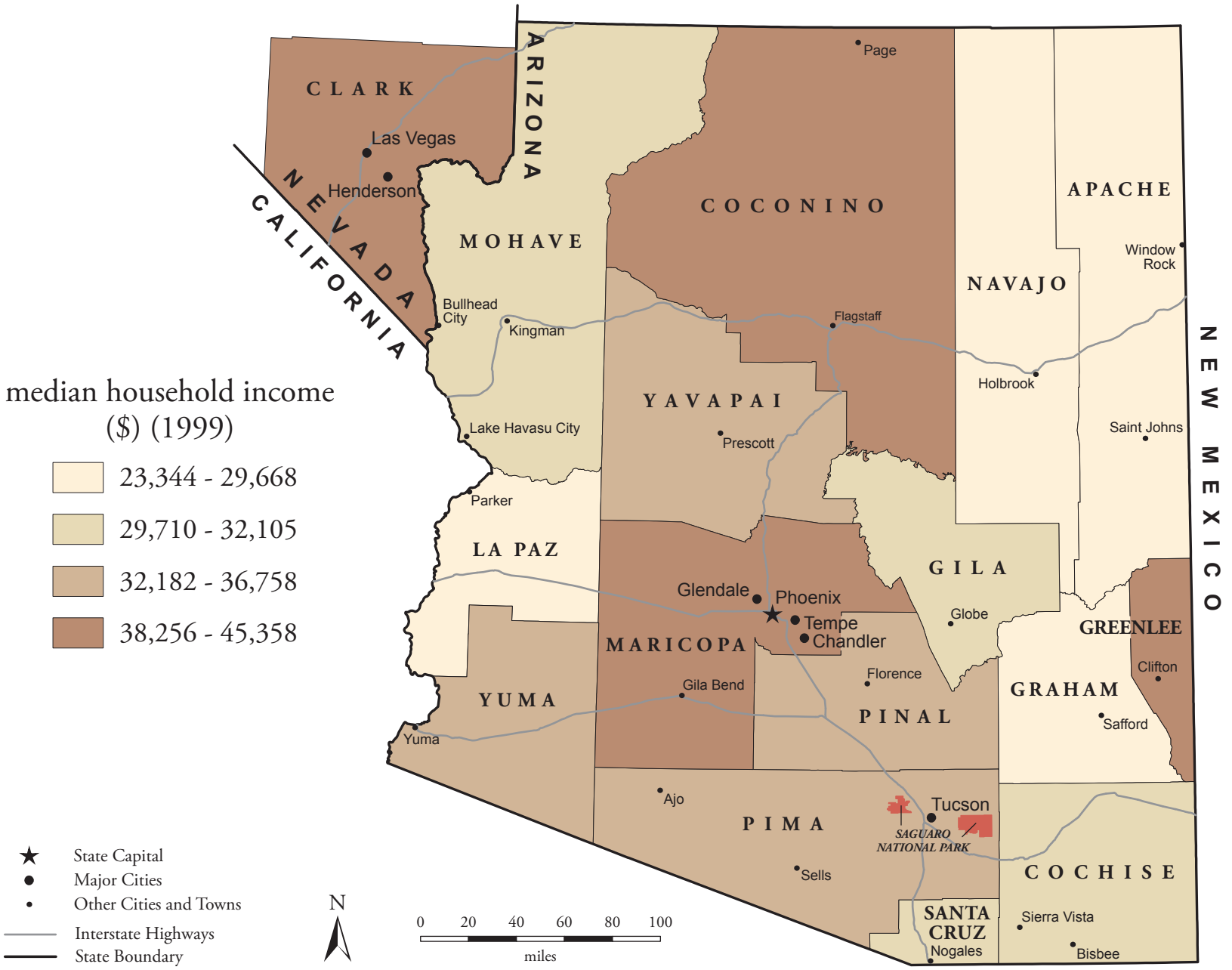
Number Line
showing distribution of data

median household income ($) (1999)	
Apache	23,344
La Paz	25,839
Navajo	28,569
Graham	29,668
Santa Cruz	29,710
Gila	30,917
Mohave	31,521
Cochise	32,105
Yuma	32,182
Yavapai	34,901
Pinal	35,856
Pima	36,758
Coconino	38,256
Greenlee	39,384
Clark	44,616
Maricopa	45,358

← 32,144

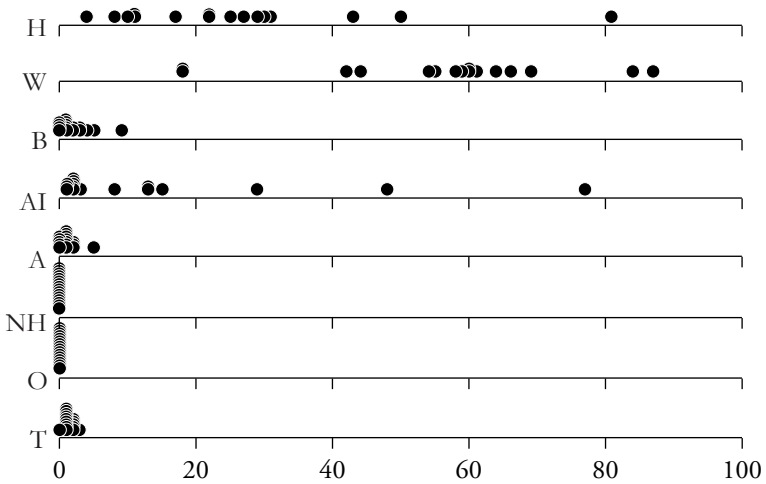
National = 41,994
Arizona = 40,558
Nevada = 44,581

Median Household Income



Racial and Ethnic Composition

Racial and ethnic composition is indicated by the relative size of each of the major race groups and the separate Hispanic ethnic category as classified by the U.S. Census Bureau. These characteristics of the region's population reveal its diversity, which informs park activities such as interpretation and outreach. Within the Saguaro NP region (2000), non-Hispanic whites constitute the largest racial group in 12 of the 16 counties. Santa Cruz County has the largest percentage of persons of Hispanic or Latino origin.[12]



Number Line
showing distribution of data

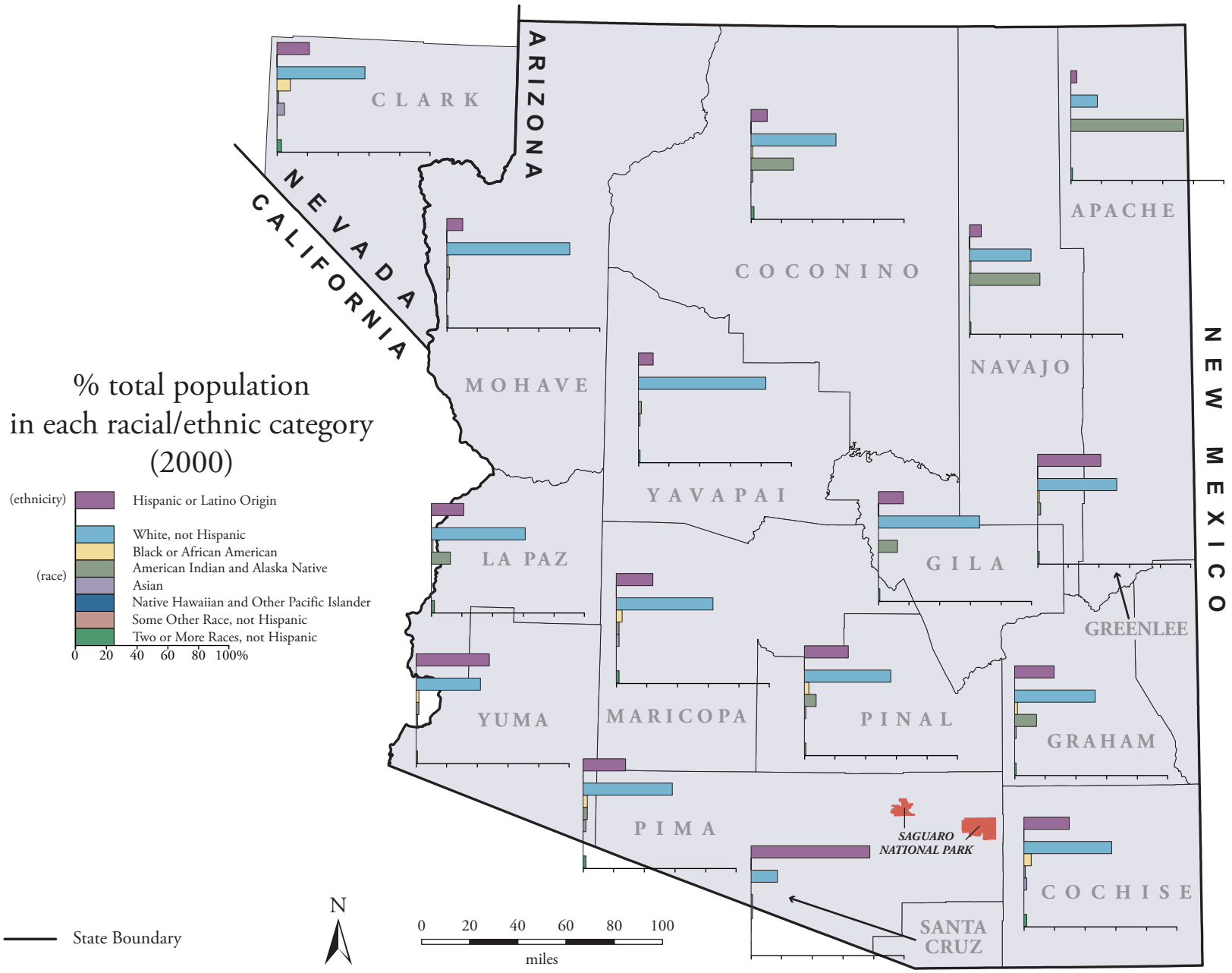
H = Hispanic or Latino Origin
W = White, not Hispanic
B = Black or African American
AI = American Indian and Alaska Native
A = Asian
NH = Native Hawaiian and Other Pacific Islander
O = Some Other Race, not Hispanic
T = Two or More Races, not Hispanic

Percentages for race may not add to one hundred due to rounding

% total population
in each racial/ethnic category
(2000)

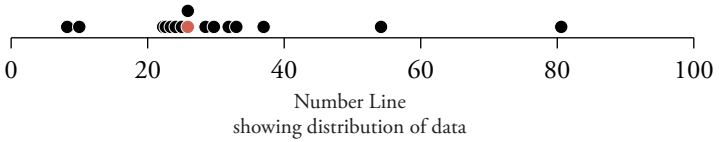
	H	W	B	AI	A	NH	O	T
Apache	4	18	0	77	0	0	0	1
Clark	22	60	9	1	5	0	0	3
Cochise	31	60	5	1	2	0	0	2
Coconino	11	58	1	29	1	0	0	2
Gila	17	69	0	13	0	0	0	1
Graham	27	55	2	15	1	0	0	1
Greenlee	43	54	1	2	0	0	0	1
La Paz	22	64	1	13	0	0	0	2
Maricopa	25	66	4	2	2	0	0	2
Mohave	11	84	1	2	1	0	0	1
Navajo	8	42	1	48	0	0	0	1
Pima	29	61	3	3	2	0	0	2
Pinal	30	59	3	8	1	0	0	1
Santa Cruz	81	18	0	1	1	0	0	0
Yavapai	10	87	0	2	1	0	0	1
Yuma	50	44	2	2	1	0	0	1
National	13	69	12	1	4	0	0	2
Arizona	25	64	3	5	2	0	0	1
Nevada	20	65	7	1	5	0	0	2

Racial and Ethnic Composition



Racial Diversity

Racial diversity is measured as the percentage of the population who identify themselves as belonging to minority groups. In the current U.S. context, "minority" races are defined as non-white (Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other Race, and Two or More Races). Interactions among people are often influenced by racial identity. Hence, it makes sense for institutions ranging from retailers to police to parks to consider regional racial diversity when recruiting and training staff, when designing public information and educational materials, and when soliciting public involvement in decision-making. Within the Saguaro NP region, the percentage of minorities (2000) ranges from 8.1% (Yavapai) to 80.5% (Apache).[13]



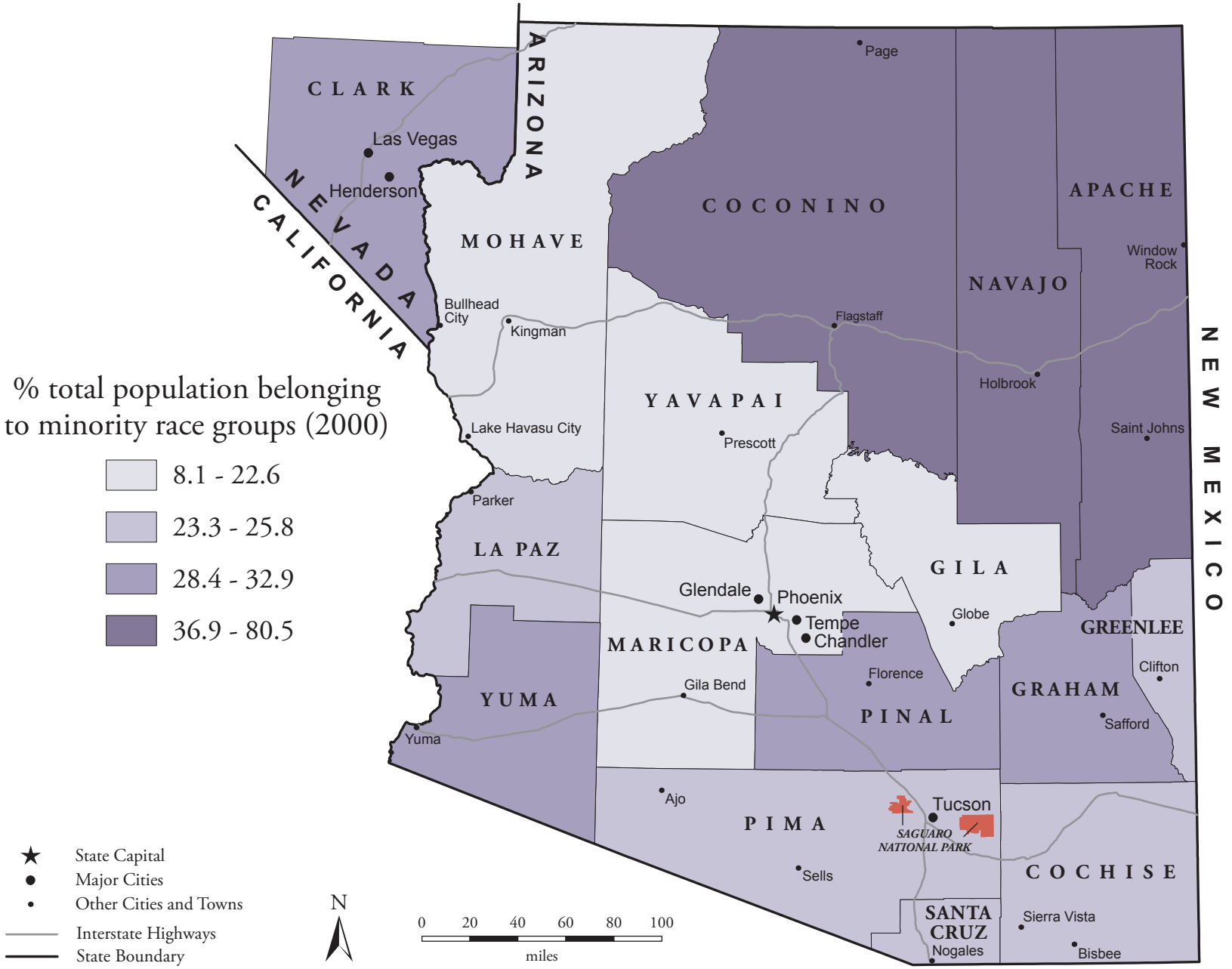
Number Line
showing distribution of data

% total population belonging to minority race groups (2000)

Yavapai	8.1
Mohave	9.9
Gila	22.2
Maricopa	22.6
Cochise	23.3
Santa Cruz	24.0
Pima	24.9
Greenlee	**25.8**
La Paz	**25.8**
Clark	28.4
Pinal	29.6
Yuma	31.7
Graham	32.9
Coconino	36.9
Navajo	54.1
Apache	80.5

National = 24.9
Arizona = 24.5
Nevada = 24.8

Racial Diversity



Educational Attainment

Educational attainment indicators measure the average amount of formal education that a county's residents have received. One indicator of educational attainment is the percentage of adults who have attended or graduated from college. Educational attainment influences many aspects of life, such as how much money people earn, what they do for recreation, where they get their information, and how they participate in civic life. With regard to park management, the educational attainment of the general public is an important consideration in activities, such as marketing, public participation processes, and the design of interpretive programs. Within the Saguaro NP region, the percentage of adults with some college education (2000) ranges from 31.6% (Santa Cruz) to 50.9% (Coconino).[14]

Number Line
showing distribution of data

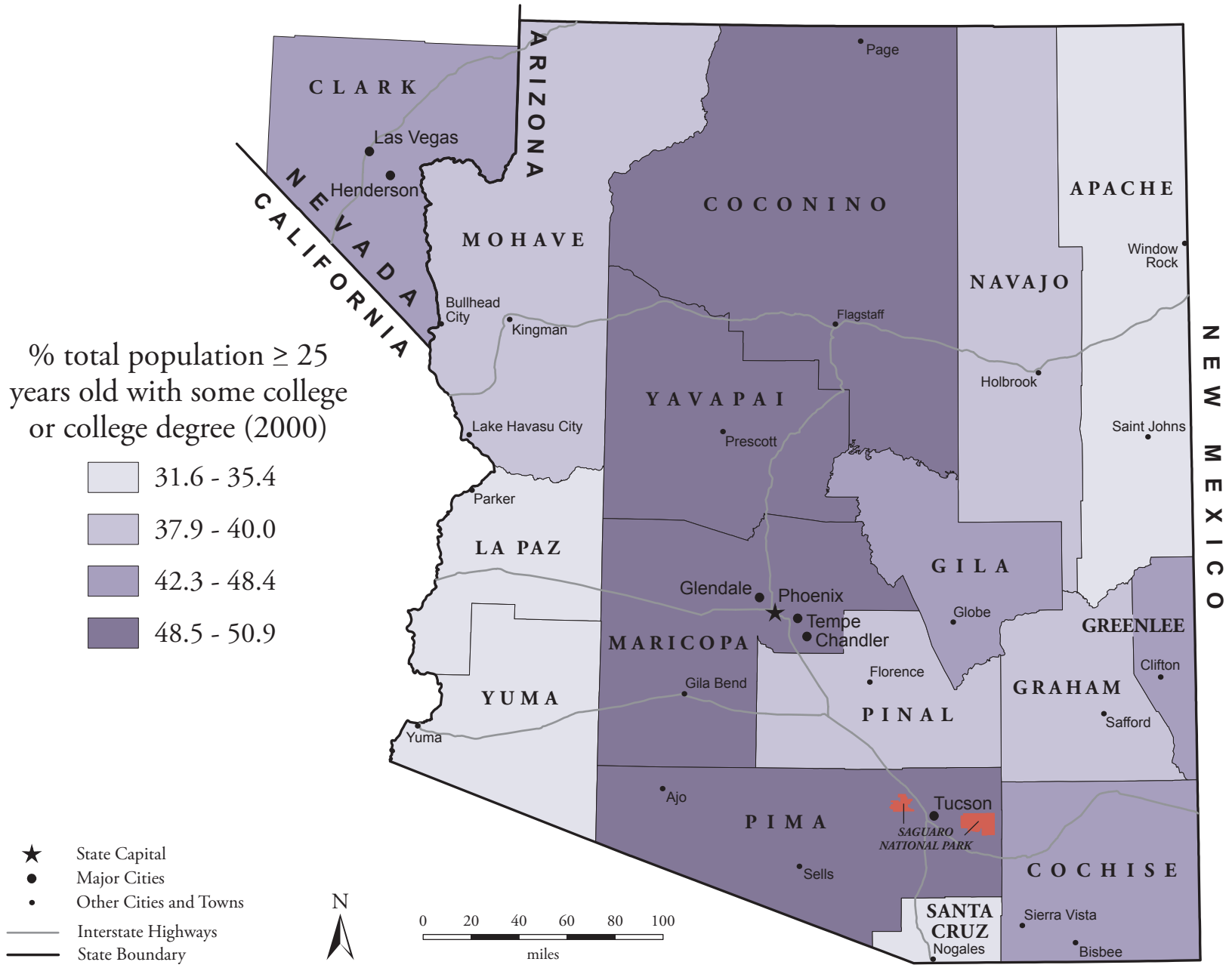
% total population ≥ 25 years old with some college or college degree (2000)

Santa Cruz	31.6
La Paz	32.1
Apache	34.7
Yuma	35.4
Pinal	37.9
Navajo	38.6
Mohave	39.1
Graham	40.0
Greenlee	42.3
Clark	43.7
Gila	44.1
Cochise	48.4
Yavapai	48.5
Pima	49.3
Maricopa	50.7
Coconino	50.9

41.2

National = 42.9
Arizona = 48.3
Nevada = 45.2

Educational Attainment



English Language Ability

Indicators of English language ability measure how familiar people are with either spoken or written English. One indicator of English language ability is the percentage of the total county population over age 5 who report that they do not speak English, or do not speak it very well. Knowledge of English can influence people's ability to access basic public information, to obtain services such as education and health care, to gain many types of employment, and to exercise political power. An awareness of the characteristics of the region's non-English speaking community can help park managers design effective public relations, public participation, and interpretive programs. Within the Saguaro NP region, the percentage of people with little or no English language ability (2000) ranges from 1.5% (Mohave) to 19.0% (Santa Cruz).[15]

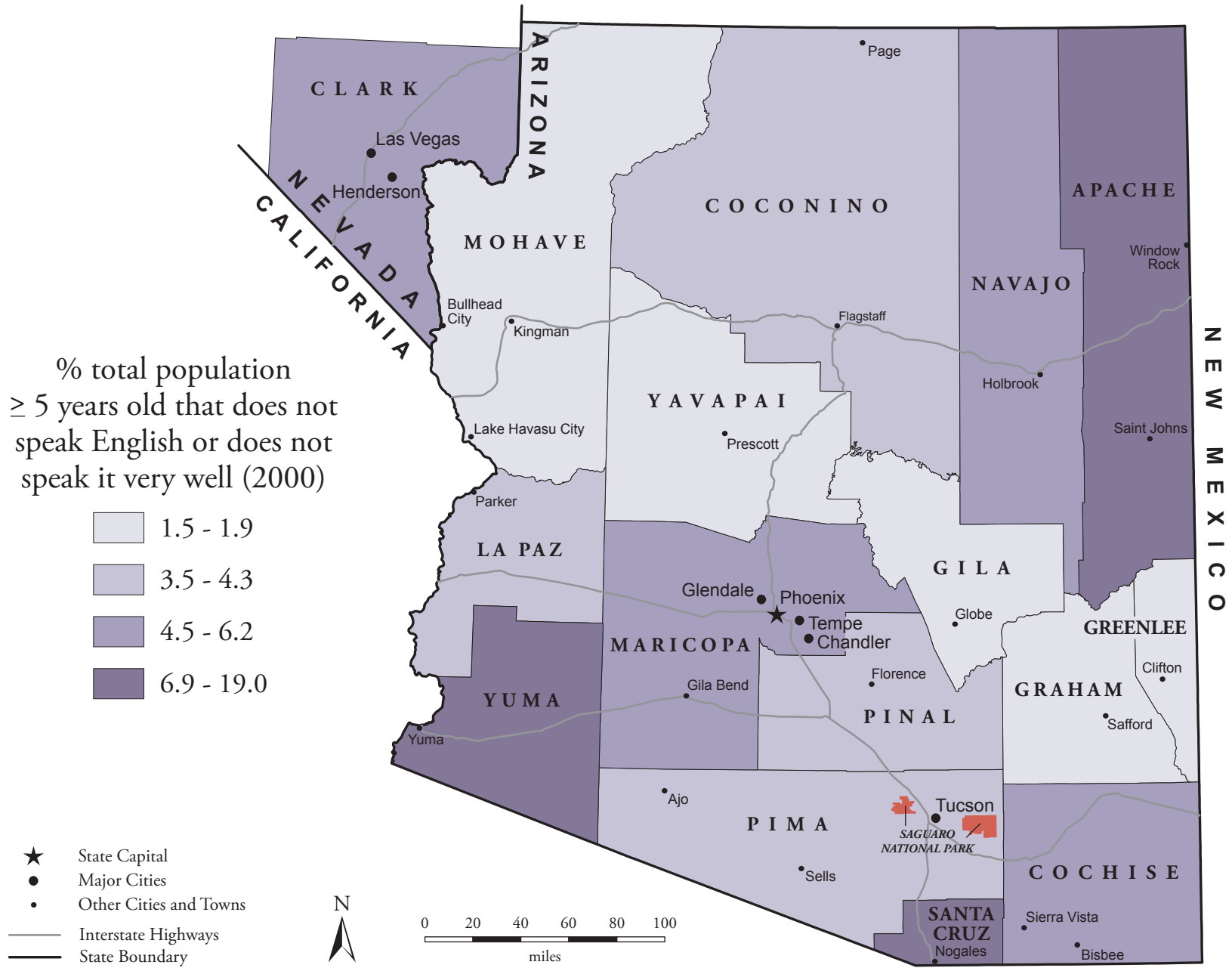
Number Line
showing distribution of data

% total population ≥ 5 years old that does not speak English or does not speak it very well (2000)

Mohave	1.5
Gila	1.6
Greenlee	1.8
Graham	1.9
Yavapai	1.9
Coconino	3.5
La Paz	**4.2**
Pinal	**4.2**
Pima	4.3
Cochise	4.5
Navajo	4.6
Clark	6.2
Maricopa	6.2
Apache	6.9
Yuma	12.0
Santa Cruz	19.0

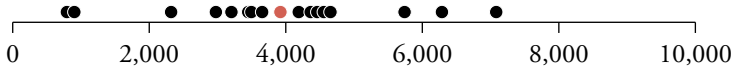
National = 3.9
Arizona = 5.2
Nevada = 2.3

English Language Ability



Crime

Crime indicators measure the frequency of various types of lawbreaking. One commonly used crime indicator is the number of serious crimes reported per 100,000 people. Serious crimes refer to murder and non-negligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, arson, and motor vehicle theft. A high crime rate has many impacts on the general population, such as higher insurance rates and a reduced sense of security. Crime also affects government by increasing the demand for police, court services, and prisons. Crime presents direct challenges to park management, as the protection of visitors, park property, and resources becomes a greater priority. Within the Saguaro NP region, the number of serious crimes reported per 100,000 people (2000) ranges from 784 (Greenlee) to 7,073 (Pima).



Number Line
showing distribution of data

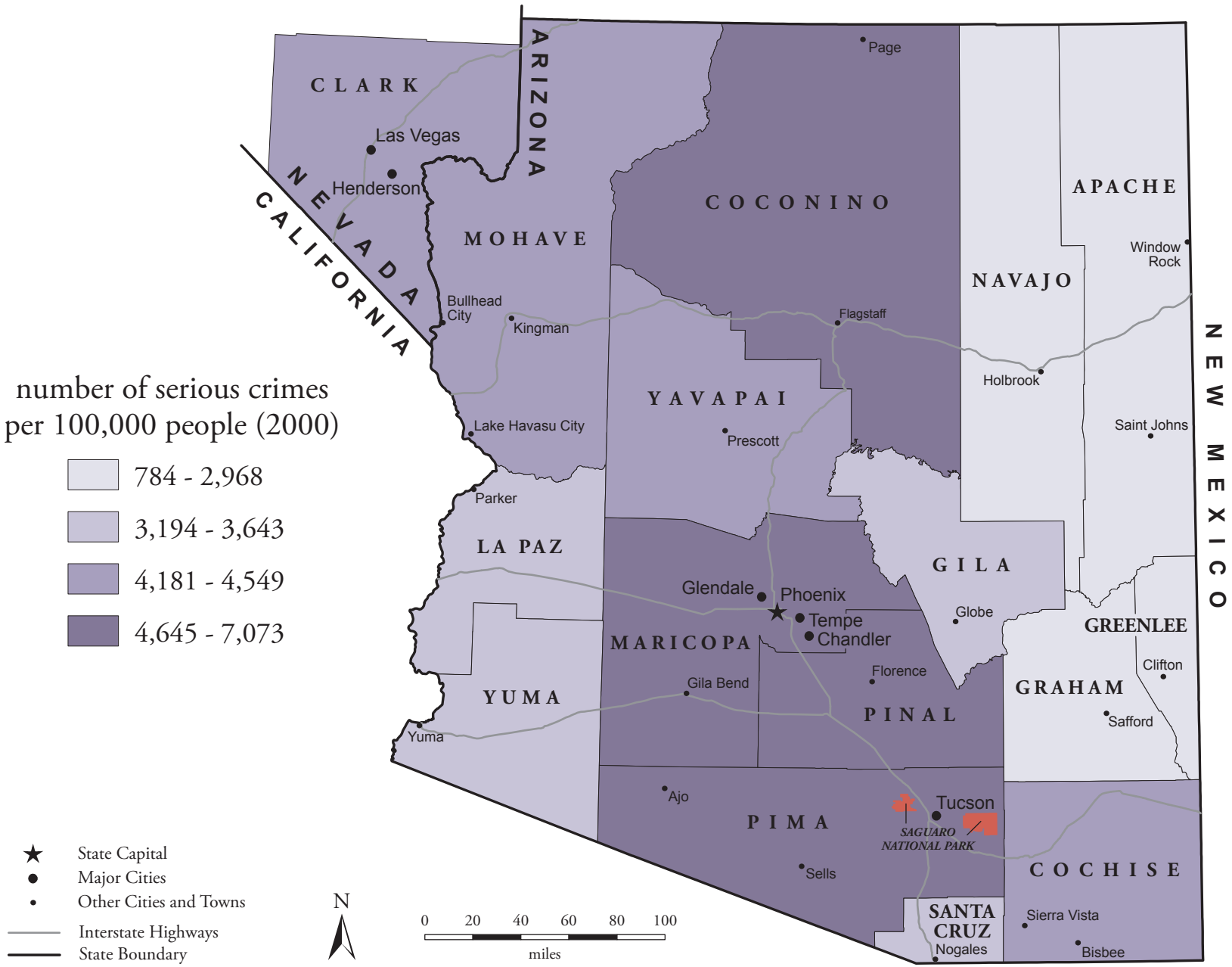
number of serious crimes per 100,000 people (2000)

Greenlee	784
Apache	893
Graham	2,311
Navajo	2,968
Santa Cruz	3,194
Yuma	3,439
La Paz	3,490
Gila	3,643
Cochise	4,181
Yavapai	4,353
Mohave	4,450
Clark	4,549
Pinal	4,645
Coconino	5,730
Maricopa	6,279
Pima	7,073

3,912

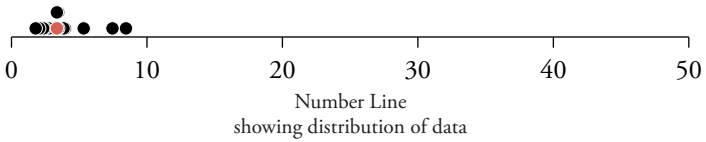
National = N/A
Arizona = 7,074
Nevada = 4,298

Crime


number of serious crimes per 100,000 people (2000)
784 - 2,968
3,194 - 3,643
4,181 - 4,549
4,645 - 7,073
ARIZONA
NEVADA
CALIFORNIA
NEW MEXICO
CLARK
Las Vegas
Henderson
MOHAVE
Bullhead City
Kingman
Lake Havasu City
Parker
LA PAZ
YUMA
Yuma
COCONINO
Page
Flagstaff
YAVAPAI
Prescott
APACHE
Window Rock
NAVAJO
Holbrook
Saint Johns
GILA
Globe
GREENLEE
Clifton
GRAHAM
Safford
Glendale
Phoenix
Tempe
Chandler
MARICOPA
Florence
Gila Bend
PINAL
Ajo
PIMA
Tucson
SAGUARO NATIONAL PARK
Sells
COCHISE
Sierra Vista
Bisbee
SANTA CRUZ
Nogales
State Capital
Major Cities
Other Cities and Towns
Interstate Highways
State Boundary
N
0 20 40 60 80 100
miles

Recreation/Tourism Establishments

The recreation and tourism industry is measured using two categories: the arts, entertainment and recreation sector (ranging from museums and concerts, to sporting events and amusement parks) and the accommodation subsector of the accomodation and food services sector (ranging from hotels to campsites). The size of these sectors is a broad indicator of a county's economic reliance on recreation and tourism relative to the other sectors of the economy. Recreation and tourism establishments can be proponents of actions that enhance their area's attractiveness as a visitor destination (such as transportation improvements, protection of scenic or cultural landmarks, or marketing campaigns). Recreation and tourism establishments also can be vulnerable to, and thus wary of, actions, policies, or chance events that could affect business, such as visitor use restrictions, fires, or economic downturns. Within the Saguaro NP region, the percentage of total establishments in arts, entertainment, recreation, and accommodation (2001) ranges from 1.7% (Maricopa) to 8.4% (La Paz).[16]



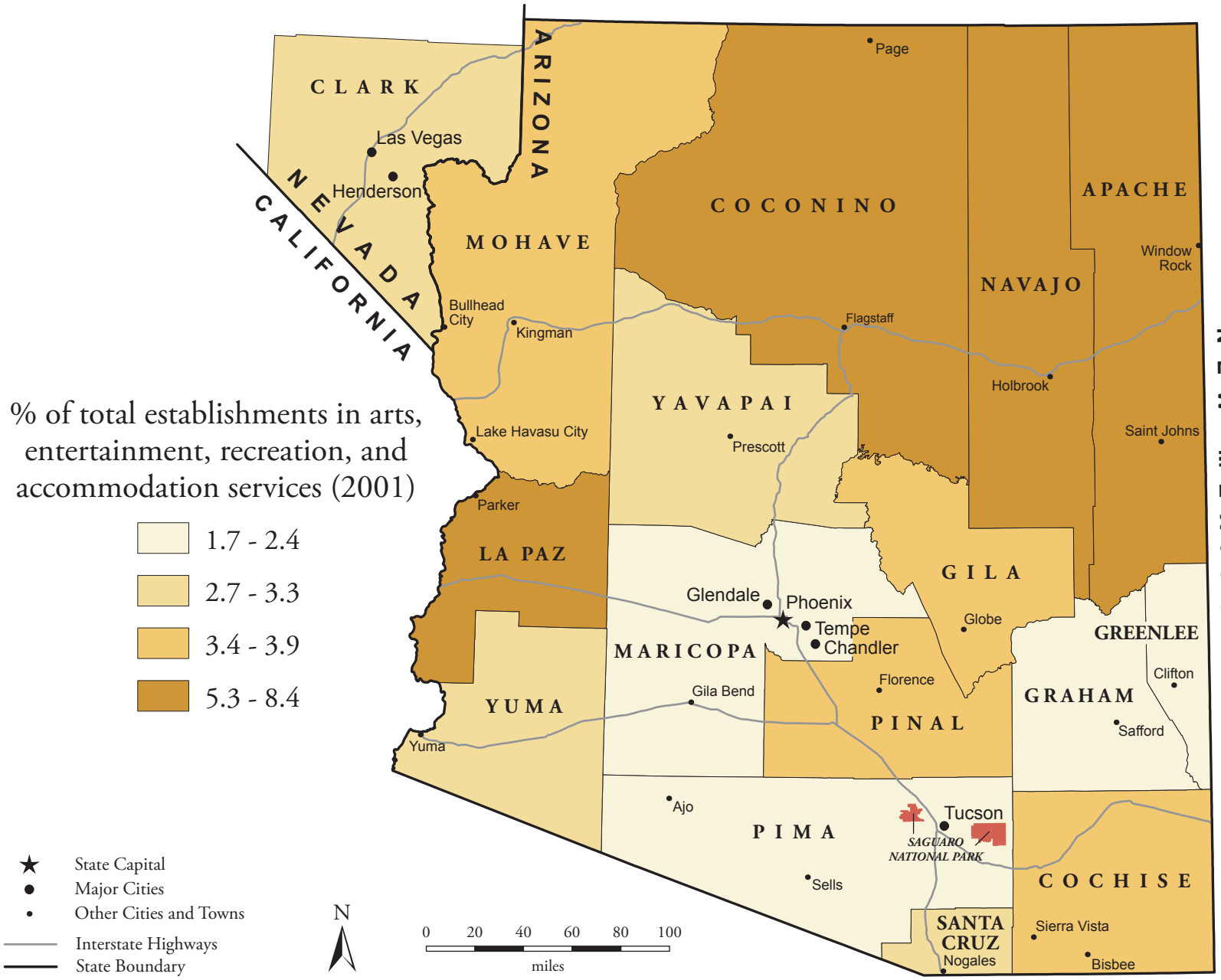
Number Line
showing distribution of data

% of total establishments in arts, entertainment, recreation, and accommodation services (2001)

Maricopa	1.7
Greenlee	2.0
Pima	2.3
Graham	2.4
Santa Cruz	2.7
Yavapai	3.1
Clark	**3.3**
Yuma	**3.3**
Mohave	3.4
Pinal	3.4
Cochise	3.8
Gila	3.9
Apache	5.3
Navajo	5.3
Coconino	7.4
La Paz	8.4

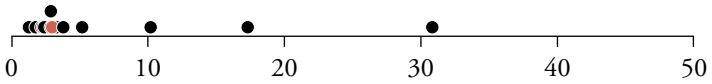
National = 2.3
Arizona = 2.3
Nevada = 3.4

Recreation/Tourism Establishments



Recreation/Tourism Revenue

Recreation and tourism revenue is a key indicator of the economic importance of recreation and tourism to a county. Recreation and tourism revenue can be expressed as a percentage of total sales and service receipts. Recreation and tourism establishments can occupy an important position within a county economy because they attract visitor dollars from elsewhere. Secondary economic benefits are realized when these dollars are re-spent within the local economy or deposited in banks, where they provide capital to other businesses. Within the Saguaro NP region, the percentage of total sales from arts, entertainment, recreation, and accommodation services (1997) ranges from 1.3% (Santa Cruz) to 30.8% (Clark).[17]



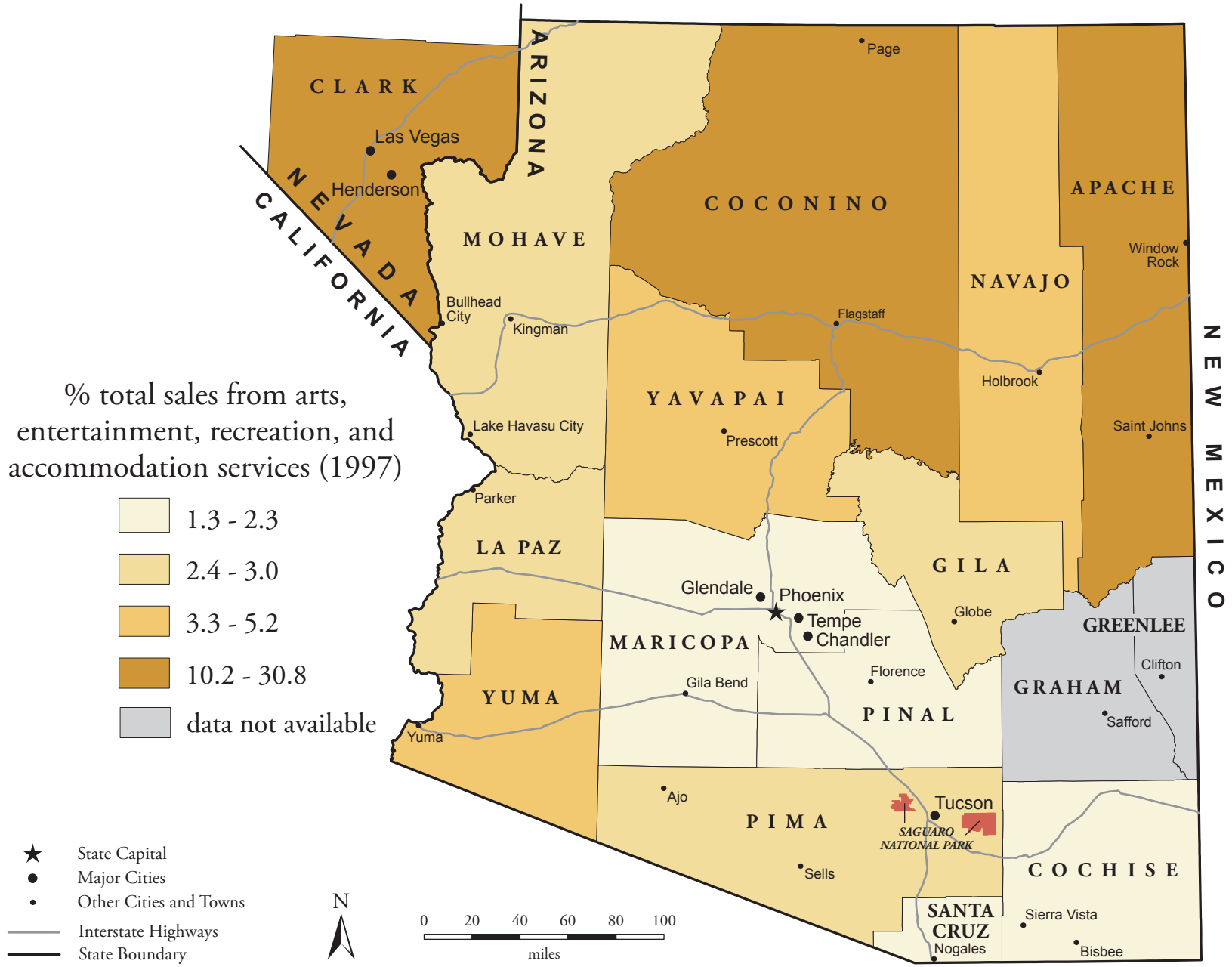
Number Line
showing distribution of data

% total sales from arts, entertainment, recreation, and accommodation services (1997)

Santa Cruz	1.3
Cochise	1.8
Maricopa	2.2
Pinal	2.3
La Paz	2.4
Mohave	2.9
Gila	2.9
Pima	**3.0**
Yuma	3.3
Yavapai	3.8
Navajo	5.2
Apache	10.2
Coconino	17.3
Clark	30.8
Graham	N/A
Greenlee	N/A

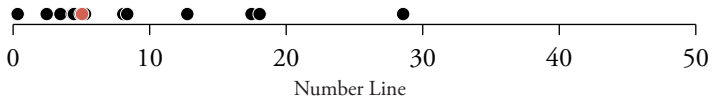
National = 1.1
Arizona = 2.1
Nevada = 17.2

Recreation/Tourism Revenue



Recreation/Tourism Employment

The significance of the recreation/tourism industry to a county economy can be indicated by the percentage of county workers that it employs. Workers counted as recreation and tourism employees include country club managers, blackjack dealers, campground employees, fishing guides, motel attendants, and other providers of recreation services. A high level of recreation/tourism employment may mean that residents have more disposable income or that the area attracts visitors or vacationers. Within the Saguaro NP region, the percentage of total paid employees in arts, entertainment, recreation, and accommodation services (2001) ranges from 0.3% (Greenlee) to 28.5% (Clark).[18]



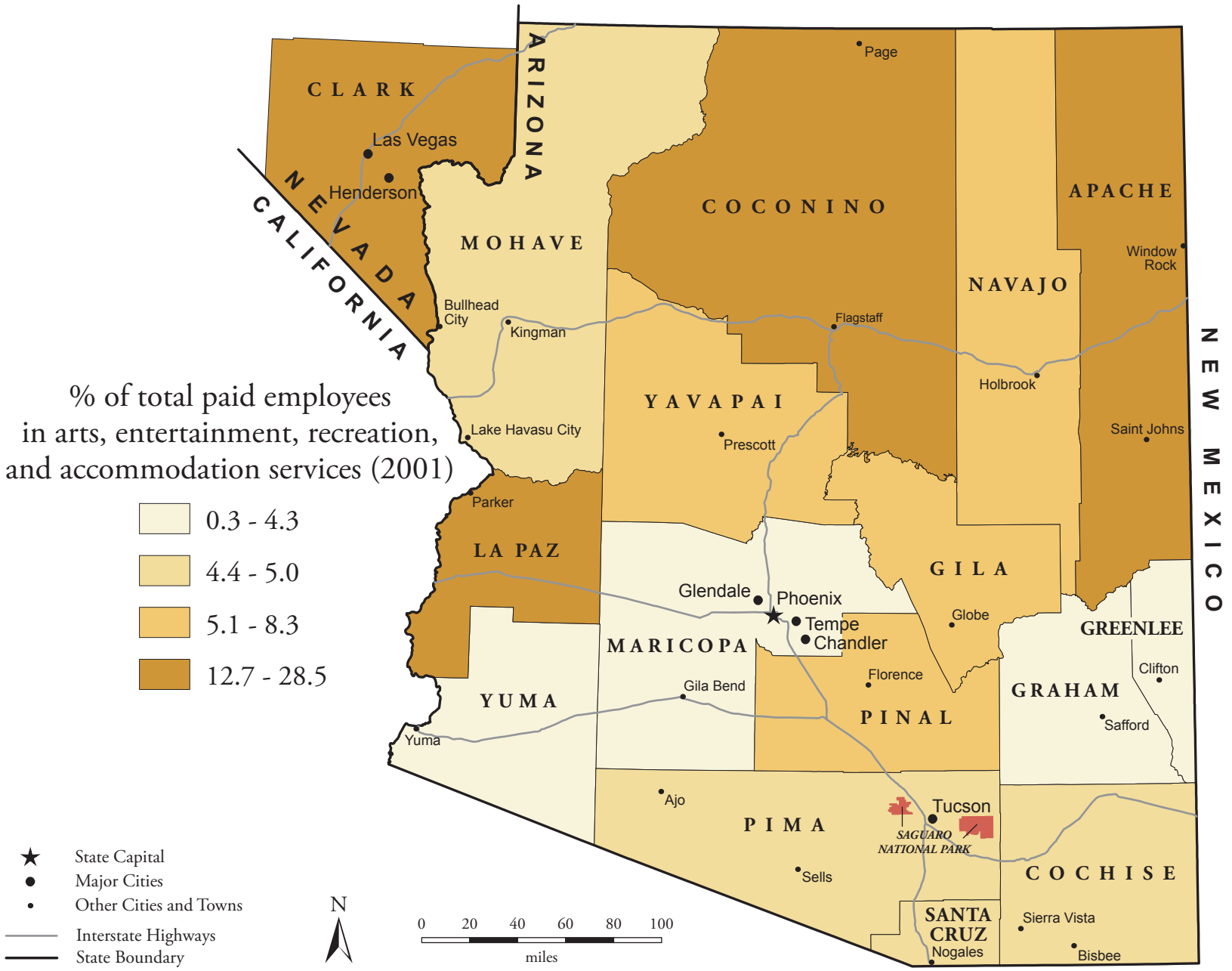
Number Line
showing distribution of data

% of total paid employees in arts, entertainment, recreation, and accommodation services (2001)

Greenlee	0.3
Graham	2.4
Maricopa	3.4
Yuma	4.3
Cochise	4.4
Mohave	4.4
Santa Cruz	4.9
Pima	**5.0**
Navajo	5.1
Yavapai	5.2
Gila	8.0
Pinal	8.3
Coconino	12.7
La Paz	17.4
Apache	18.0
Clark	28.5

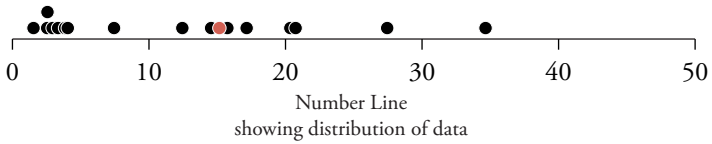
National = 3.1
Arizona = 4.1
Nevada = 25.8

Recreation/Tourism Employment



Seasonal Housing

Seasonal, recreational, and occasional use housing units are those intended for occupancy only during certain seasons of the year and are found primarily in resort areas. A park with a large number of seasonal housing units located near its boundaries can be considered a "destination park." Such parks attract people who can afford to travel a considerable distance and spend a few days in or near the park. Within the Saguaro NP region the percentage of total housing units classified for seasonal, recreational, or occasional use (2000) ranges from 1.5% (Clark) to 34.6% (La Paz).[19]



Number Line
showing distribution of data

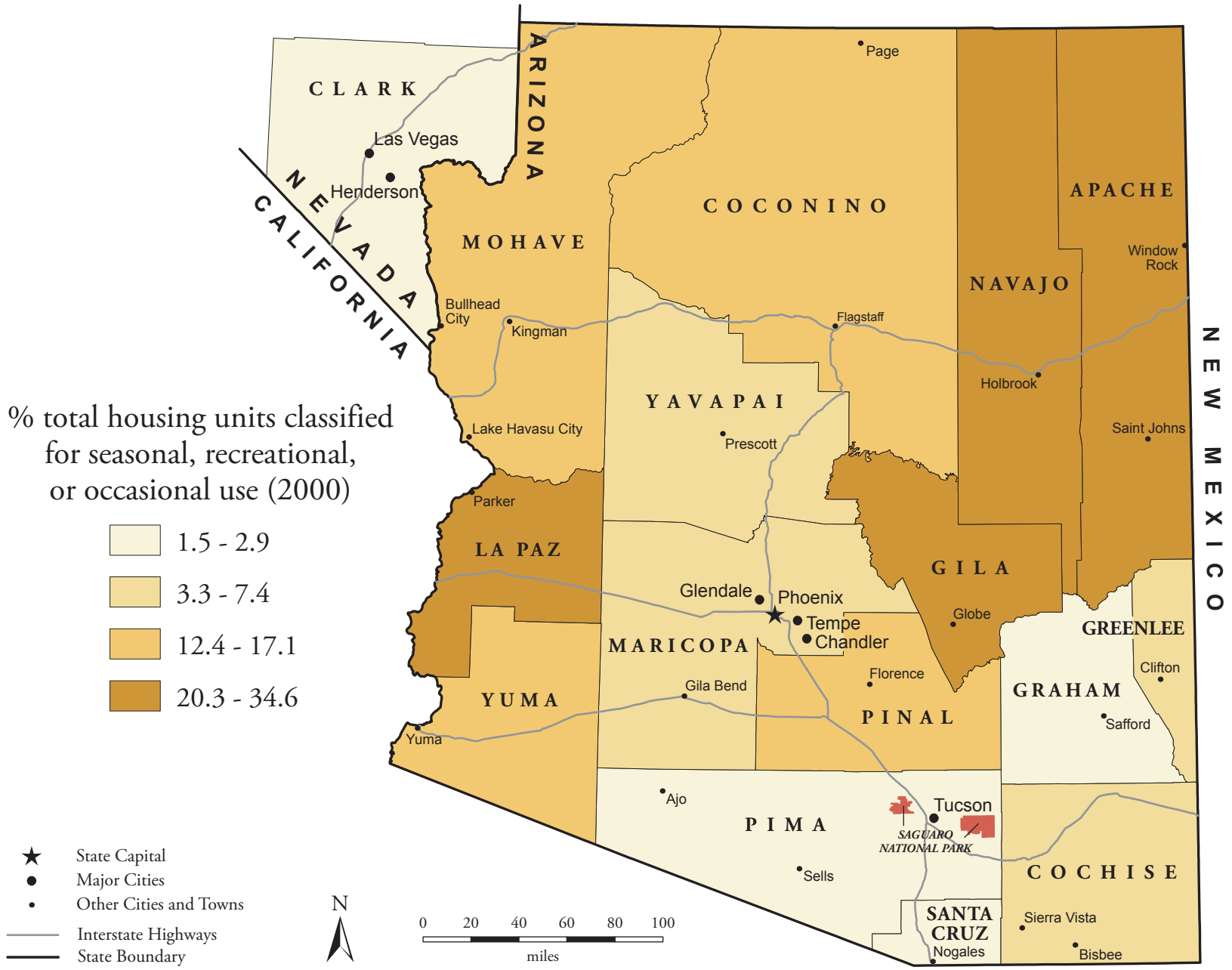
% total housing units classified for seasonal, recreational, or occasional use (2000)

Clark	1.5
Graham	2.5
Santa Cruz	2.5
Pima	2.9
Greenlee	3.3
Cochise	3.8
Maricopa	4.0
Yavapai	7.4
Mohave	12.4
Pinal	14.5
Yuma	15.7
Coconino	17.1
Gila	20.3
Apache	20.7
Navajo	27.4
La Paz	34.6

9.9

National = 3.1
Arizona = 6.5
Nevada = 2.0

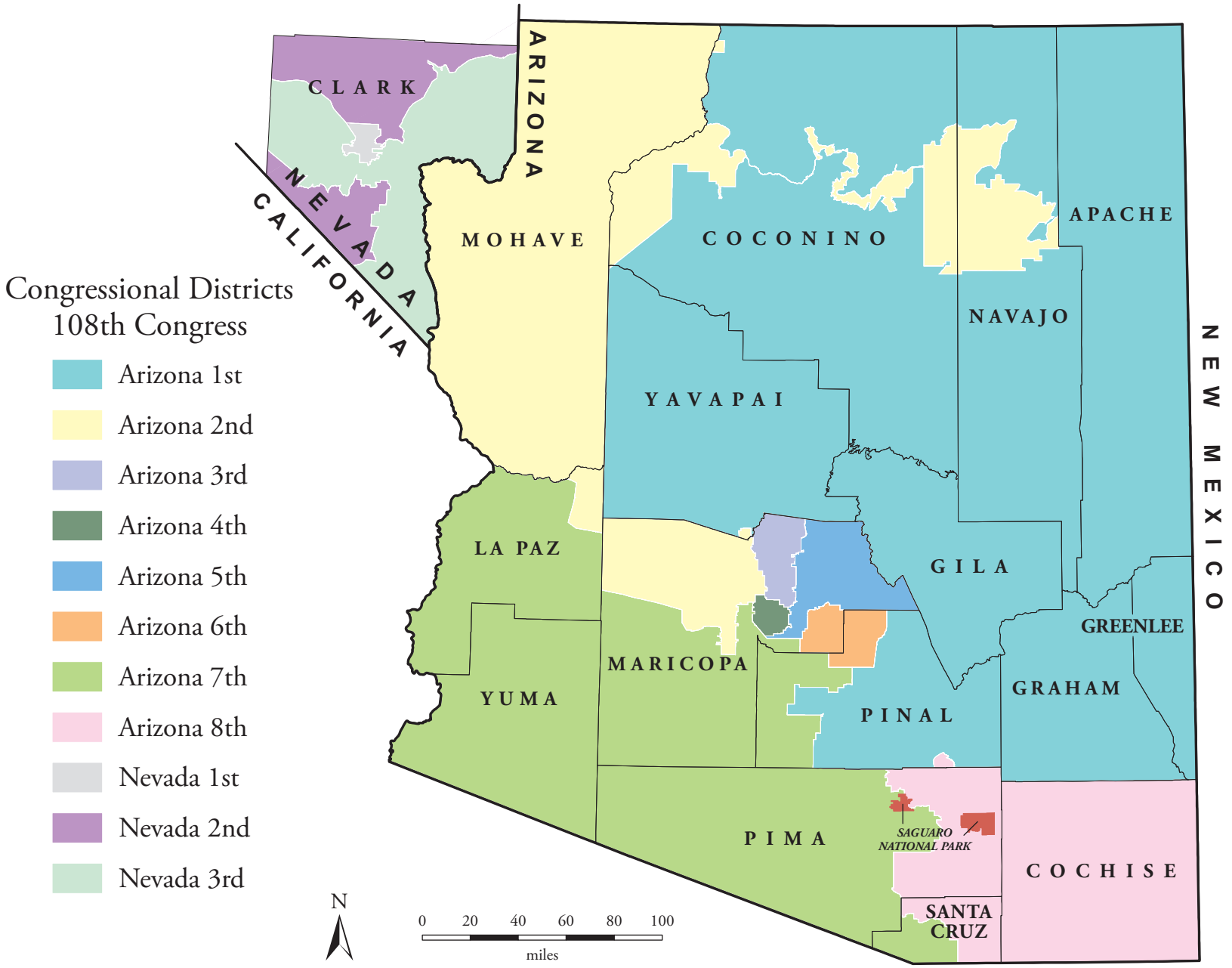
Seasonal Housing



Congressional Districts

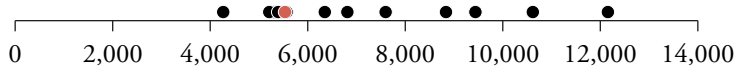
Congressional districts form a key layer in the political structure of the Saguaro NP region. These districts, roughly equivalent in population, are defined by state legislatures based on the national census and redrawn every ten years. Members of Congress are key points of access for citizens seeking to influence federal-level policies and programs, including those related to federal lands such as national parks and national forests. The Saguaro NP region includes all or portions of 11 Congressional districts, eight of which are in Arizona. These distributions are based on Census 2000 population data.

Congressional Districts



Federal Expenditures

The importance of the federal government to a county economy can be indicated by the amount of federal expenditures in the county. These expenditures can be a key source of dollars flowing into the county economy (in contrast, taxes and fees are an outflow of dollars). Federal spending can influence the park region through such wide-ranging initiatives as agricultural subsidies, social programs, military bases, and national parks. Within the Saguaro NP region, federal expenditures per person (2002) range from $4,252 (Clark) to $12,144 (Apache).[20]



Number Line
showing distribution of data

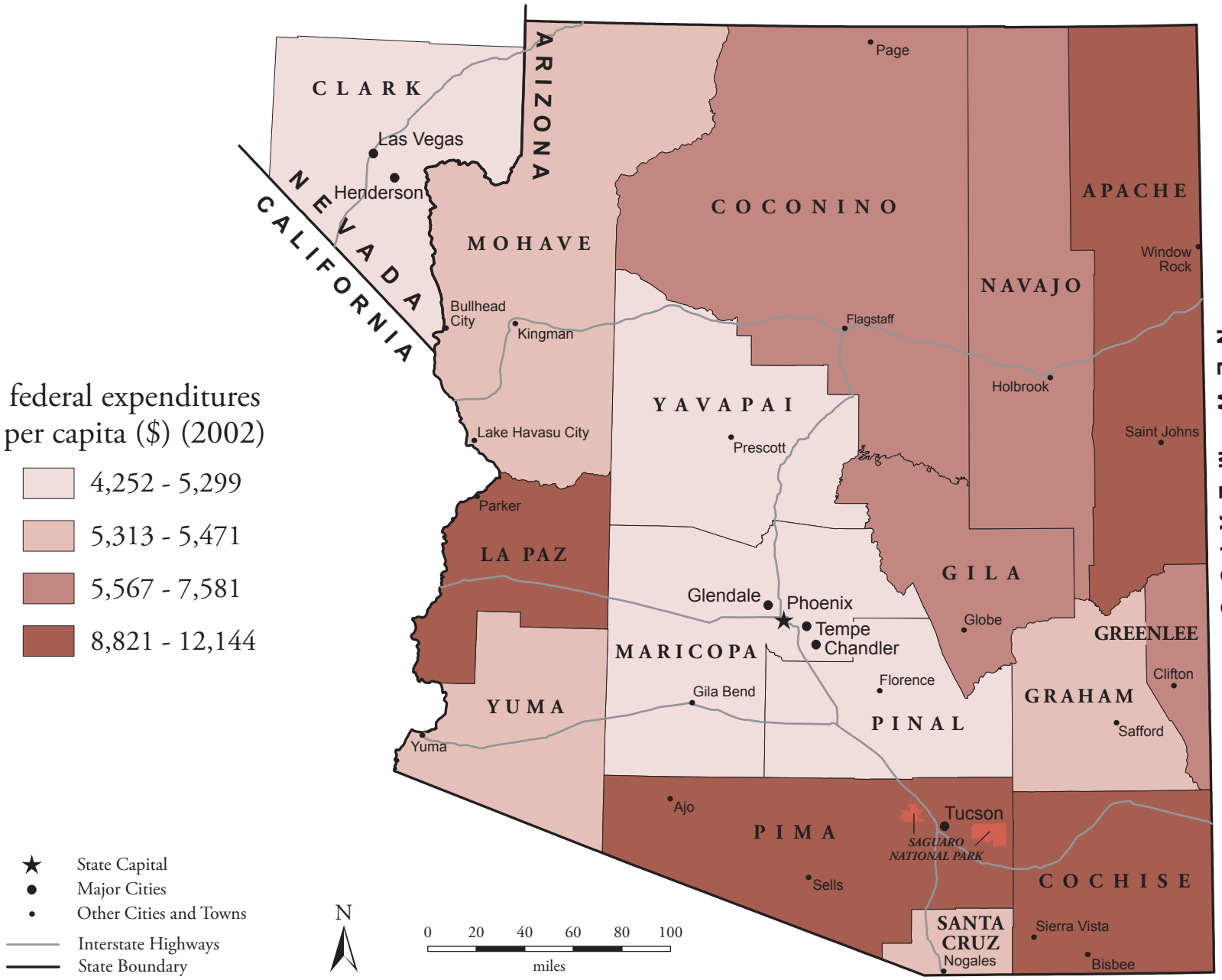
federal expenditures per capita ($) (2002)

Clark	4,252
Yavapai	5,193
Maricopa	5,235
Pinal	5,299
Santa Cruz	5,313
Mohave	5,342
Yuma	5,381
Graham	5,471
Greenlee	5,567
Coconino	6,327
Navajo	6,794
Gila	7,581
Pima	8,821
La Paz	9,427
Cochise	10,605
Apache	12,144

5,519

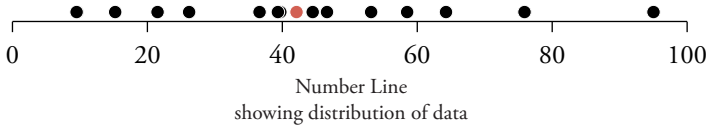
National = 6,650
Arizona = 6,371
Nevada = 4,940

Federal Expenditures



Federal Land Management

One indicator of the federal government's role in regional resource management is the amount of land under federal management. This amount can be measured as a percentage of the total land area in each county. Stewardship of private land is carried out through a combination of regulation, market forces, and voluntary action. In contrast, stewardship of public land is carried out through direct implementation of agency policies. Thus the variation in public versus private land ownership across the park region can significantly influence the design and implementation of resource protection strategies. Within the Saguaro NP region, land under federal management (2003) ranges from 9.4% (Navajo) to 94.9% (Clark).[21]



Number Line
showing distribution of data

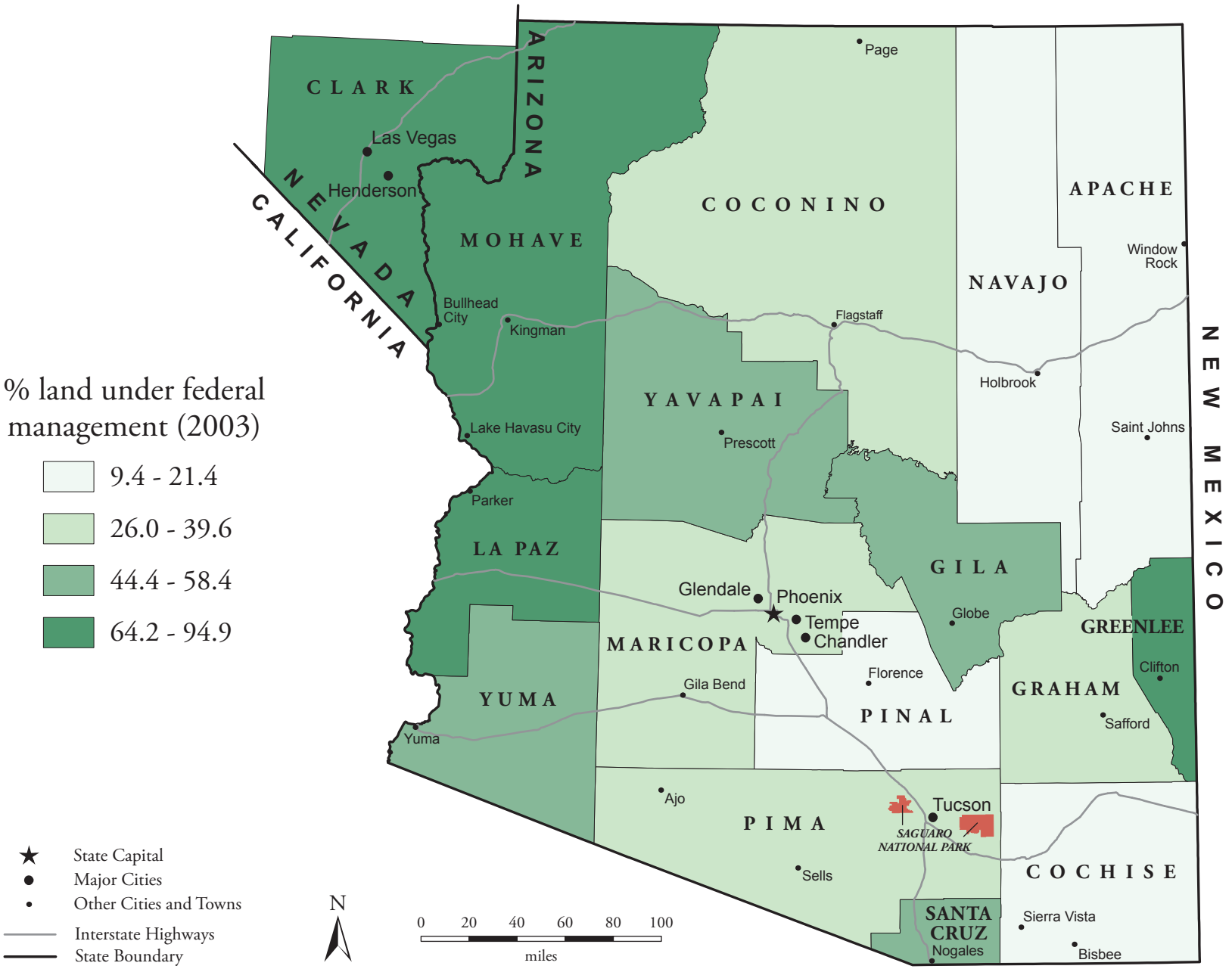
% land under federal management (2003)

Navajo	9.4
Apache	9.5
Pinal	15.1
Cochise	21.4
Pima	26.0
Graham	36.5
Maricopa	39.2
Coconino	39.6
Yuma	44.4
Yavapai	46.5
Santa Cruz	53.1
Gila	58.4
La Paz	64.2
Mohave	75.8
Greenlee	75.9
Clark	94.9

42.0

National = 27.1
Arizona = 38.0
Nevada = 80.8

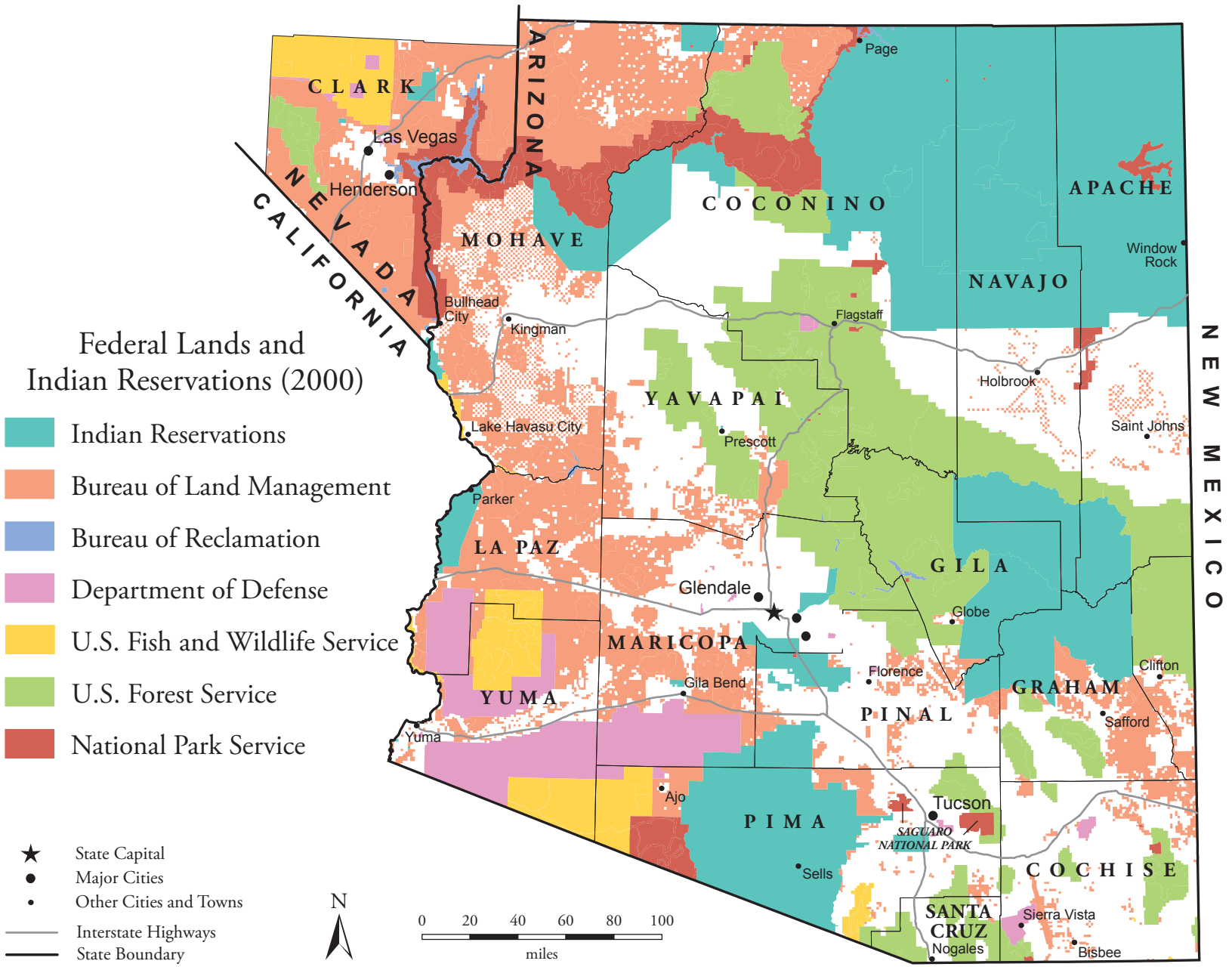
Federal Land Management



Federal Lands and Indian Reservations

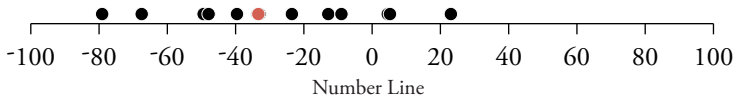
National park units, administered by the National Park Service, are part of a larger system of public lands. Other federal agencies that administer public lands include the Bureau of Land Management, Bureau of Reclamation, Department of Defense, U.S. Fish and Wildlife Service, and U.S. Forest Service. Indian Reservations are also an important part of the landscape. Public land managed by one federal agency may share boundaries with land managed by a different federal agency or with an Indian Reservation. Understanding the location and pattern of federal lands (by agency) and Indian Reservations can help park managers and others in the region cooperate on resource protection and planning issues.[22]

Federal Lands and Indian Reservations



Change in Farmland

Changes in the amount of farmland provide an indication of economic and land use trends among counties in the park region. Land can be converted to farming because of increased demand for agricultural products or because new technology, business practices, or government programs make farming profitable. Land can be taken out of farming due to soil depletion, competition from growers elsewhere, loss of labor, or conversion of land to other (often urban) uses. Within the Saguaro NP region (1987 - 1997), the amount of farmland decreased in all counties, except three. The change ranged from a decrease of 79.0% (Greenlee) to an increase of 22.9% (La Paz).[23]



Number Line
showing distribution of data

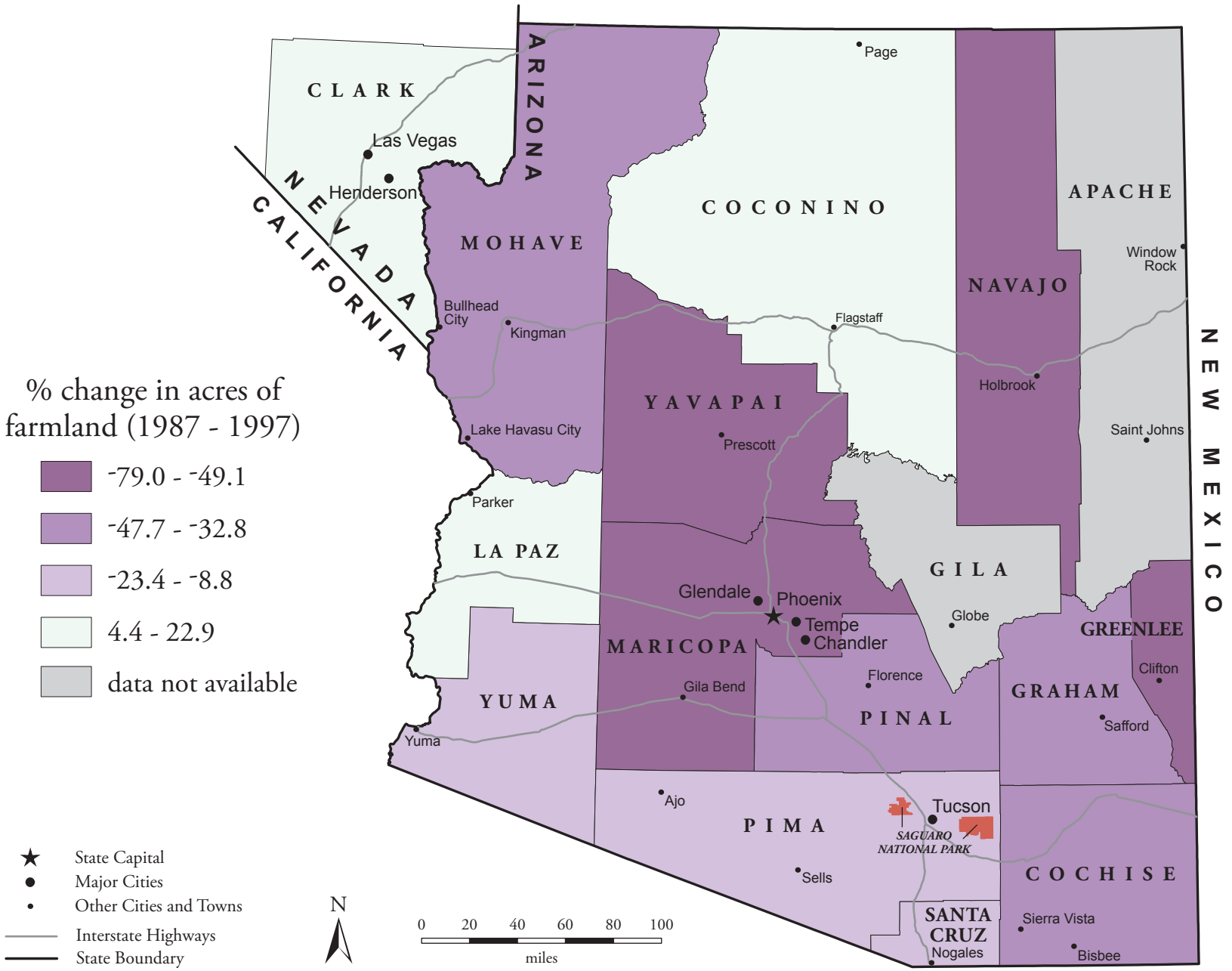
% change in acres of farmland (1987 - 1997)

Greenlee	-79.0
Yavapai	-67.3
Navajo	-49.2
Maricopa	-49.1
Mohave	-47.7
Cochise	-39.4
Pinal	-33.4
Graham	-32.8
Santa Cruz	-23.4
Yuma	-12.7
Pima	-8.8
Clark	4.4
Coconino	5.1
La Paz	22.9
Apache	N/A
Gila	N/A

-33.1

National = -3.39
Arizona = -26.0
Nevada = -35.8

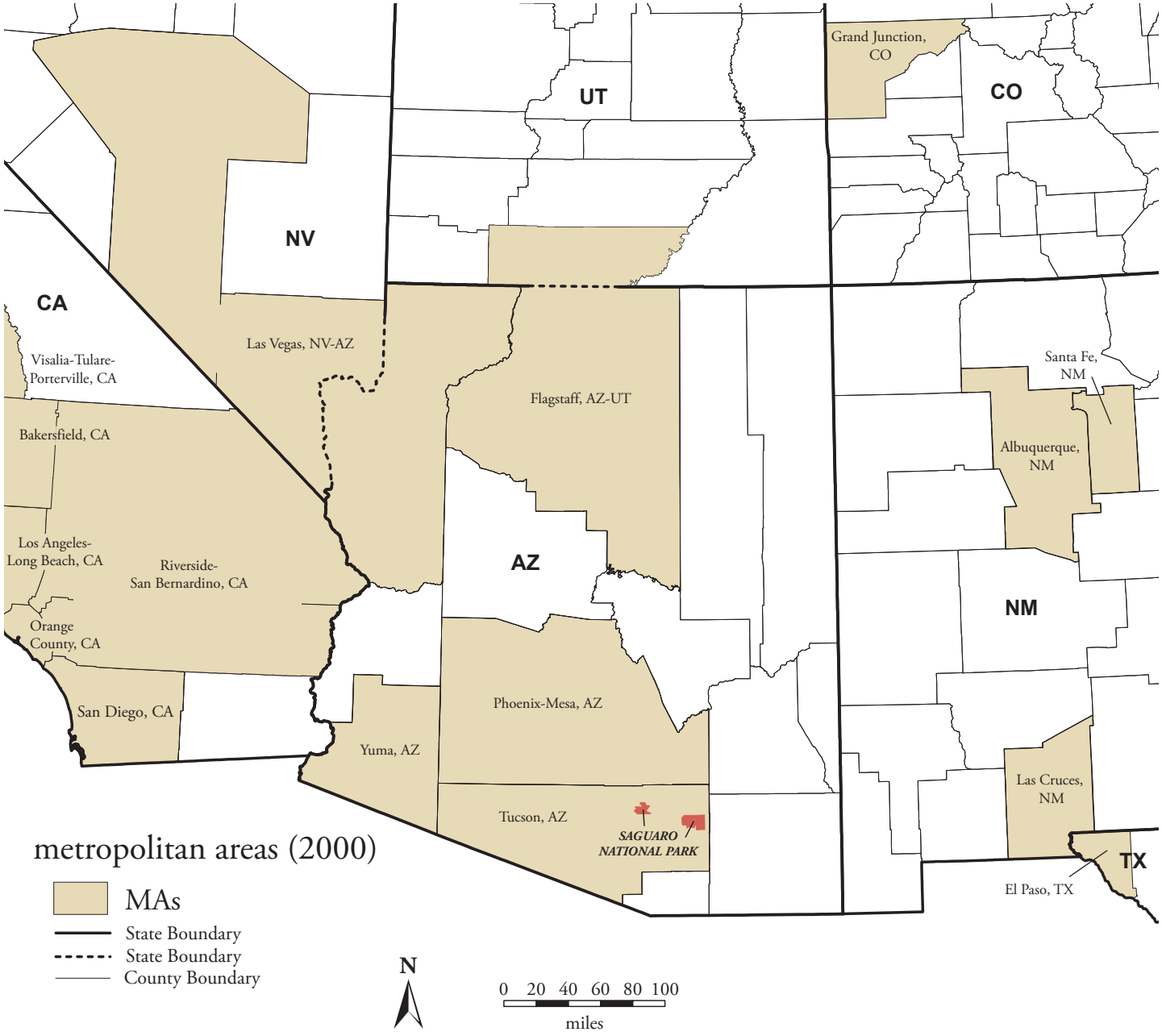
Change in Farmland



Metropolitan Areas

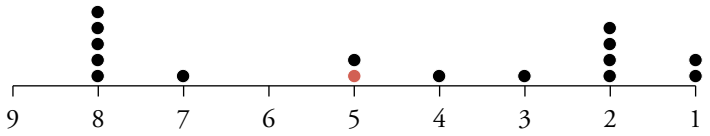
Maps of metropolitan areas show park managers densely populated urban areas that are near national park units. The Census Bureau defines a metropolitan area (MA) as having a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that nucleus. Some MAs are defined around two or more nuclei. Each MA must contain either a place with a minimum population of 50,000 or a Census Bureau defined urbanized area and a total MA population of at least 100,000. For this map, a larger region around Saguaro National Park is provided to show the extent of MAs.[24]

Metropolitan Areas



Urbanization

Urbanization is a measurement of the degree to which land has been developed as towns and cities. The political and economic priorities of more urbanized counties tend to differ from those of less urbanized counties. The concentration of people in towns, cities, and large metropolitan areas creates opportunities for cooperative efforts (such as municipal water systems, public transportation, and a host of non-governmental organizations) but also can increase the incidence of problems such as congestion, air pollution, and habitat fragmentation. The Economic Research Service classifies counties' degree of urbanization along a continuum ranging from completely rural (not near metro area and small population size) to large metropolitan. Within the Saguaro NP region (1997), six of the sixteen counties are classified as belonging to metropolitan areas.[25]



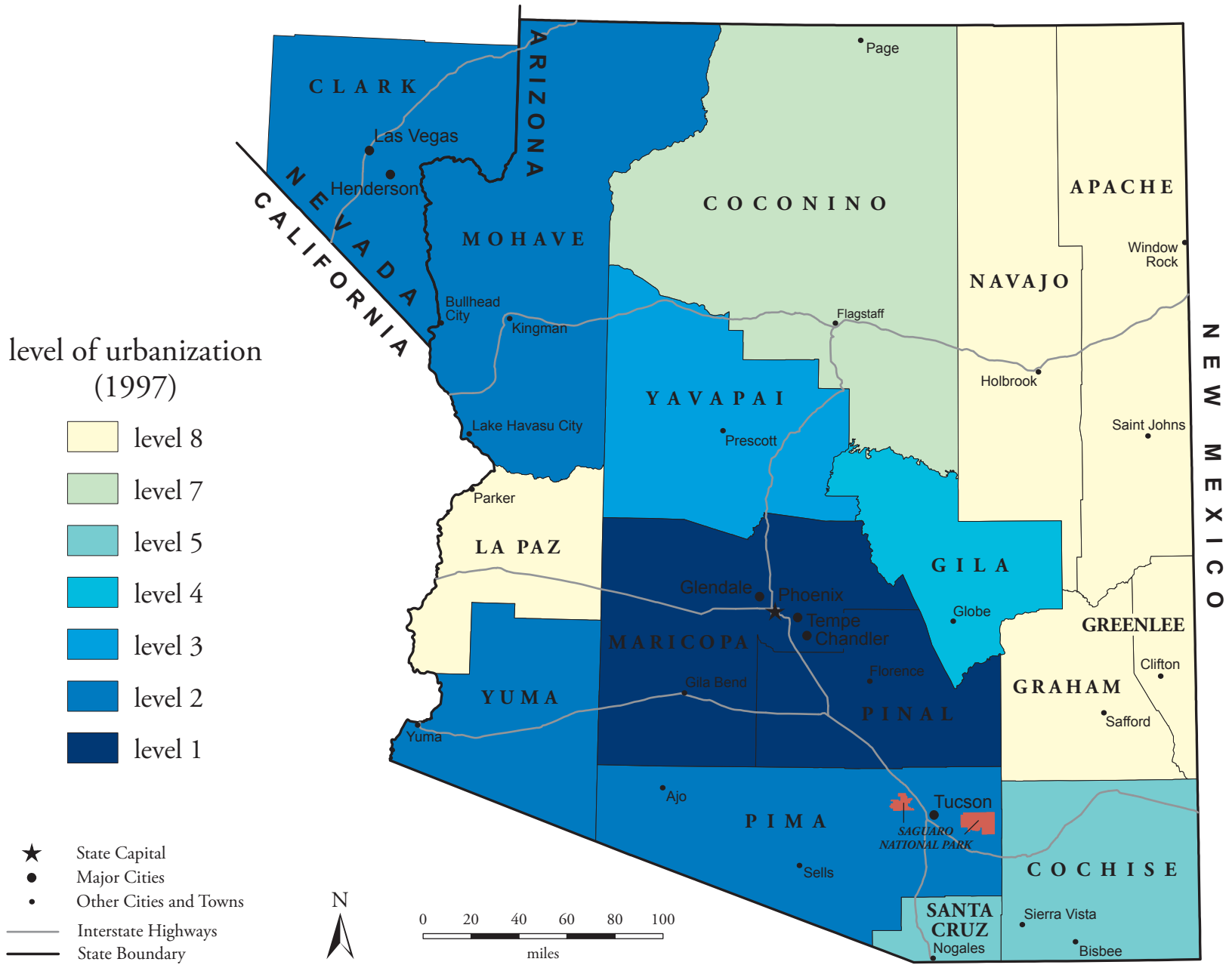
Number Line
showing distribution of data

level of urbanization (1997)

Apache	8
Graham	8
Greenlee	8
La Paz	8
Navajo	8
Coconino	7
Cochise	**5**
Santa Cruz	**5**
Gila	4
Yavapai	3
Clark	2
Mohave	2
Pima	2
Yuma	2
Maricopa	1
Pinal	1

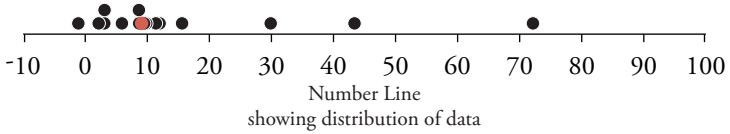
1 Part of large metro area of 1 million+
2 Part of small metro area of <1 million
3 Adjacent to large metro area, and has city of 10,000+
4 Adjacent to large metro area, and does not have city of 10,000+
5 Adjacent to small metro area, and has city of 10,000+
7 Not adjacent to metro area, has city of 10,000 +
8 Not adjacent to metro area, has town of 2,500 to 9,999

Urbanization



Change in Building Permits

One indicator of growth in a local economy is the annual change in the number of building permits issued for new privately-owned housing units. Growth in the number of building permits directly implies an accelerating demand for construction labor, supplies, and services. It indirectly implies that families are growing, retirees are moving to an area, or industries are moving and expanding economic output. Rapid growth can generate new political priorities (such as greater demand for roads and schools) and can increase land values. Growth also alters the human impact within the ecosystem through effects such as increased water consumption, loss of cropland or habitat, or greater valuation of open space. Within the Saguaro NP region, the average change in the number of building permits issued annually (1992 - 2002) ranges from -1.0% (Graham) to 72.0% (Greenlee).[26]



Number Line
showing distribution of data

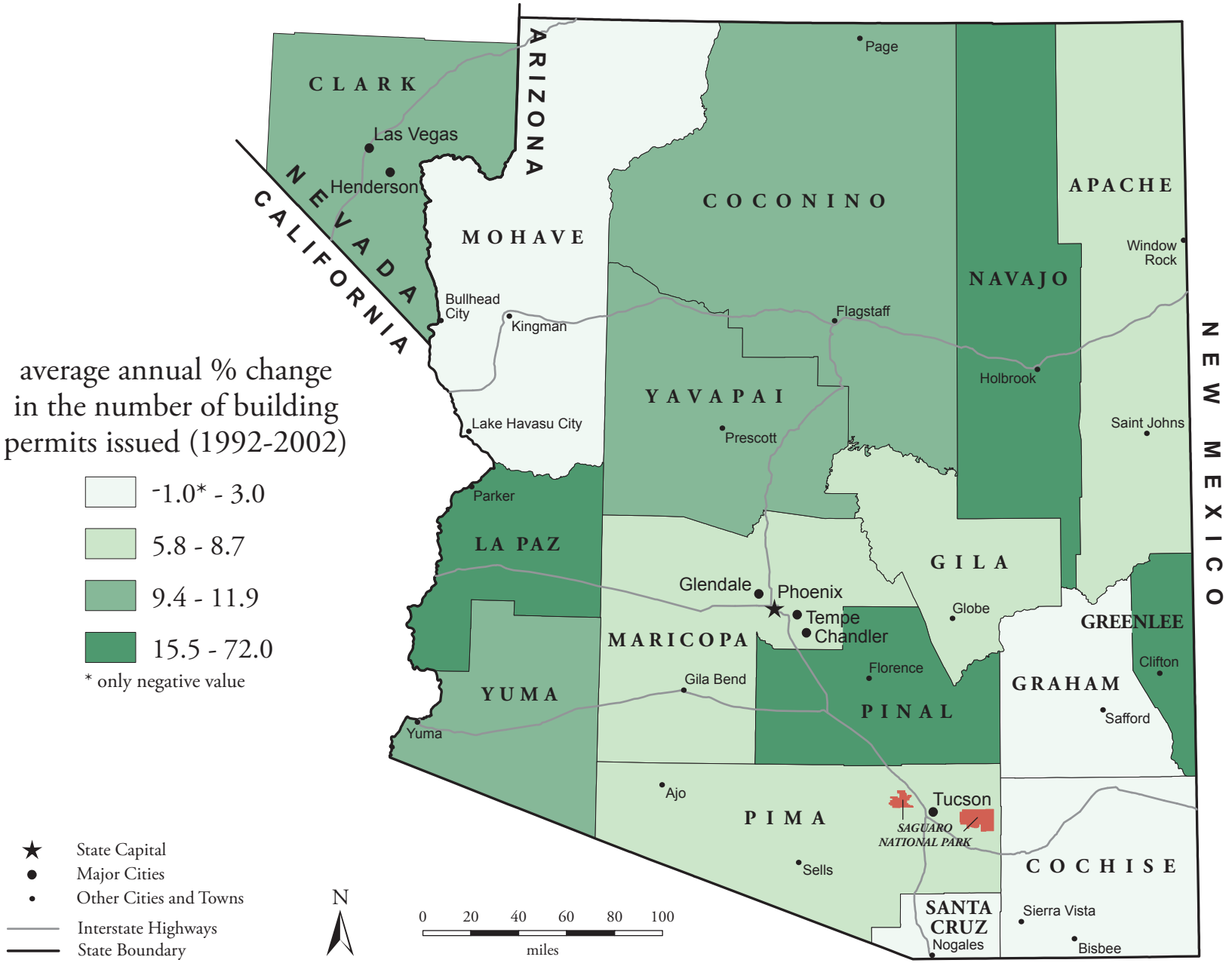
average annual % change in the number of building permits issued (1992 - 2002)

Graham	-1.0
Cochise	2.1
Mohave	3.0
Santa Cruz	3.0
Gila	5.8
Maricopa	8.6
Pima	8.6
Apache	8.7
Clark	9.4
Yuma	9.7
Yavapai	11.3
Coconino	11.9
Navajo	15.5
Pinal	29.8
La Paz	43.3
Greenlee	72.0

9.0

National = 4.6
Arizona = 3.1
Nevada = 8.5

Change in Building Permits



Conclusion: Using This Atlas for Park Management

A national park functions as part of a regional human ecosystem. A natural ecosystem can be understood in terms of factors such as flora, fauna, rainfall, temperature, elevation, and soil. Similarly, a human ecosystem can be understood in terms of factors such as population, commerce, social and cultural practices, politics, and land use patterns.

The regional human ecosystem, like the natural ecosystem, strongly influences the long-term health of the park's natural and cultural resources. Just as a park may be concerned with upstream activities outside its boundaries yet inside its watershed, parks are also concerned with human activities taking place outside their boundaries yet inside their region. Thus, knowledge of natural and human conditions external to a park is as essential to park management as knowledge of internal natural and cultural conditions.

This atlas focuses on human activities and features in the region surrounding Saguaro National Park. Five primary applications for this atlas as a tool for park management are:

- monitoring activities and analyzing trends that could have short- or long-term impacts on the park;
- making comparative studies, both within the region and between regions;
- assessing potential social impacts of management decisions;
- supporting collaborative decision-making and public participation; and
- educating park staff and other stakeholders about regional socioeconomic trends.

Monitoring activities and analyzing trends. The standardized data sources and presentation format of this atlas allow it to serve as a baseline for long-term monitoring of human conditions and trends that impact the park, such as immigration, economic shifts, or changes in the level of poverty. These human conditions and trends can have significant implications for park planning and management. For example, the atlas can be consulted to determine trends in the prevalence of English language ability among regional residents. This information could be important in designing interpretive and public participation programs that can increase access to and advocacy on behalf of the park. The atlas can be used to gain knowledge about the overall structure of and local variations in the regional economy. This information could be important to developing a strong collaborative working relationship with regional business leaders. The atlas can be examined to recognize trends in land use. This information could support proactive planning to mitigate potential impacts of development such as habitat fragmentation, degradation of air or water quality, or intrusions upon historic settings and/or scenic values.

Comparative studies. This atlas can support comparative studies of two kinds. First, the atlas can be used to compare counties within the region. By displaying the range of values for a particular indicator or a set of indicators, the atlas can help identify specific counties where it may be desirable to take (or avoid taking) certain management actions because of the potential impact on the human ecosystem. Second, the atlas can be used to make comparisons with other park regions. Potential management actions can be evaluated in terms of how effective they have been for another park unit where similar regional socioeconomic factors are involved.

Social impact assessment. Federal law and NPS planning directives require that park managers evaluate the social impacts of potential management actions. The socioeconomic indicators displayed in this atlas can make an important contribution to such social impact assessments. For example, the maps displayed here could be used to help understand the impacts of various park management plans and provide context for assessments at smaller scales, such as local communities.

Collaborative decision-making. In developing general management plans, park staff are directed to "consider the park holistically … as part of the surrounding region" and to conduct planning "as part of cooperative regional planning whenever possible" (Director's Order 1998-2, par. 3.3.1.2). Tools such as this atlas can support the goal of applying a regional perspective to park planning and management. Distribution of this atlas to citizens, elected officials, educators, business and service groups, resource managers, and others can strengthen their ability to effectively participate in park management activities and decision-making. Maps that present facts in a standardized format can be particularly helpful for establishing common ground on which to decide upon management priorities, especially for decisions that affect both the park and the adjacent region.

Education and orientation. The atlas can be used to orient new park staff, as well as central office staff, to some of the basic facts about human activities in the park's region of interest. It can also serve as a tool for sharing information about socioeconomic trends with the public, gateway communities, media, and Congress.

In conclusion, effective park management requires a clear understanding of human activities in the surrounding region that can impact park resources and operations. By providing the "basic facts" about such activities, this atlas can help managers, citizens, and others better provide for the preservation and enjoyment of Saguaro National Park.

Appendices

Appendix 1: Data Sources for Indicators

The data sources used to obtain the measures for the socioeconomic indicators are listed below. The indicators listed on the left correspond to the titles of the maps in the atlas. The measure corresponds to captions for the legends used in the maps and the ranked data tables.

INDICATOR	MEASURE	DATA SOURCE
General Population		
*Total Population	total number of people (2003)	Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com.
*Recent Population Change	% change in total number of people (1990 - 2000)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/population/cen2000/atlas/all_00.xls
*Projected Population Change	projected % change in total number of people (2000 - 2020)	Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com.
Population Density	average number of people per square mile (2000)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/population/cen2000/atlas/all_00.xls
Population Density Change	% change in average number of people per square mile (1980 - 2000)	1) U.S. Department of Commerce, Census Bureau. USA Counties 1998, http://censtats.census.gov/cgi-bin/usac/usasel.pl *(1980 population density)* 2) U.S. Department of Commerce, Census Bureau, http://www.census.gov/population/cen2000/atlas/all_00.xls *(2000 population density)*
Projected Population Density	projected average number of people per square mile (2020)	1) U.S. Department of Commerce, Census Bureau, http://www.census.gov/population/cen2000/atlas/all_00.xls *(county square mile data)* 2) Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com *(2020 projected population)*

Appendix 1: Data Sources for Indicators (continued)

INDICATOR	MEASURE	DATA SOURCE
Elderly Population	% total population ≥ 65 years old (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 1 (SF1) 100% Data, Table P12
Projected Elderly Population	projected % total population ≥ 65 years old (2020)	Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
Urban Population	% total population living in urban areas (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 1 (SF1) 100% Data, Table P2
Economy and Commerce		
*Earnings by Industry	% total earnings by industrial category (1999)	Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
Projected Change in Earnings by Industry	projected % change in total earnings by industrial category (2000 - 2020)	Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com
*Employment by Industry	% employment by industrial category (1999)	Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com

Appendix 1: Data Sources for Indicators (continued)

INDICATOR	MEASURE	DATA SOURCE
Projected Change in Employment by Industry	projected % change in employment by industrial category (2000 - 2020)	Woods & Poole Economics, Inc. 2002 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM. Washington, DC. Woods & Poole Economics, Inc. provides long-term socioeconomic data projections at the state and local levels, in both hardcopy and electronic format. http://www.woodsandpoole.com.
*Poverty	% total population in poverty (1999)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/hhes/poverty/2000census/poppvstat00.html
Median Household Income	median household income ($) (1999)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 3 (SF3) Sample Data, Table P53
Social and Cultural Characteristics		
Racial and Ethnic Composition	% total population that are: Hispanic or Latino, White (not Hispanic), Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other Race (not Hispanic), or Two or More Races (not Hispanic) (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 1 (SF1) 100% Data, Tables P7, P8
*Racial Diversity	% total population belonging to minority race groups (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 1 (SF1) 100% Data, Table P7
*Educational Attainment	% total population ≥ 25 years old with some college or college degree (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 3 (SF3) Sample Data, Table P37
English Language Ability	% total population ≥ 5 years old that does not speak English or does not speak it very well (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 3 (SF3) Sample Data, Table P19
Crime	number of serious crimes per 100,000 people (2000)	U.S. Department of the Interior, U.S. Geological Survey, http://nationalatlas.gov/crimesm.html

Appendix 1: Data Sources for Indicators (continued)

INDICATOR	MEASURE	DATA SOURCE
Recreation and Tourism		
Recreation/Tourism Establishments	% total establishments in arts, entertainment, recreation, and accommodation services (2001)	U.S. Department of Commerce, Census Bureau, http://censtats.census.gov/cbpnaic/cbpnaic.shtml
*Recreation/Tourism Revenue	% total sales from arts, entertainment, recreation, and accommodation services (1997)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/epcd/www/econ97.html
*Recreation/Tourism Employment	% total paid employees in arts, entertainment, recreation, and accommodation services (2001)	U.S. Department of Commerce, Census Bureau, http://censtats.census.gov/cbpnaic/cbpnaic.shtml
Seasonal Housing	% total housing units classified for seasonal, recreational, or occasional use (2000)	U.S. Department of Commerce, Census Bureau, http://factfinder.census.gov – Census 2000 Summary File 1 (SF1) 100% Data, Tables H3, H5
Administration and Government		
*Congressional Districts	Congressional District Boundaries (2000)	U.S. Department of the Interior, U.S. Geological Survey, http://nationalatlas.gov/cgd108m.html
*Federal Expenditures	federal expenditures per capita ($) (2002)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/prod/www/abs/cffr.html
Land Use		
*Federal Land Management	% land under federal management (2003)	1) U.S. Department of the Interior, Bureau of Land Management. Payment in Lieu of Taxes, Fiscal Year 2003. Washington, DC. http://www.blm.gov/pilt/search.html *(federal land in acres)* 2) U.S. Department of Commerce, Census Bureau http://www.census.gov/population/cen2000/atlas/all_00.xls *(2000 square mile data to convert into acres)*

Appendix 1: Data Sources for Indicators (continued)

INDICATOR	MEASURE	DATA SOURCE
*Federal Lands and Indian Reservations	Federal Lands and Indian Reservations (2000)	U.S. Department of the Interior, U.S. Geological Survey, http://nationalatlas.gov/atlasftp.html
*Change in Farmland	% change in acres of farmland (1987 - 1997)	U.S. Department of Agriculture, National Agricultural Statistics Service, http://www.nass.usda.gov/census/
*Metropolitan Areas	metropolitan areas (2000)	U.S. Department of Commerce, Census Bureau, http://www.census.gov/geo/www/cob/ma1999.html#shp
*Urbanization	level of urbanization (1997)	U.S. Department of Agriculture, Economic Research Service, http://usda.mannlib.cornell.edu/data-sets/rural/97002/
Change in Building Permits	average annual % change in the number of building permits issued (1992 - 2002)	U.S. Department of Commerce, Census Bureau, Manufacturing and Construction Division, http://www.census.gov/const/www/permitsindex.html

** Denotes a core indicator, common to all atlases in this series. Additional indicators were selected by park managers to include information specific to their particular management needs.*

Appendix 2: Technical Notes on Map Design

Selection of Base Map Data – The regional base map used to map socioeconomic indicators on the following pages includes state and county boundaries, some of the major roads, major cities, and a few other selected cities and towns. The roads, cities, and towns are included to provide readers with a few familiar points of reference. It should be emphasized that this is not a general purpose atlas of the region, for it focuses only on socioeconomic indicators.

Choropleth Mapping – For most of the maps, data are grouped by quartiles which vary in shading from light to dark (for low to high values). This shading technique, known as choropleth mapping, is usually applied to ratio data; population density, infant deaths per 1,000 live births, and median income are examples. Maps that display total amounts (such as total population) often use other approaches, such as proportional symbols. For clarity, ease of use, and consistent design, choropleth mapping is used for most of the social indicator data.

Quartile Classification – The choice of a *quartile* classification of the data means that for most maps, counties were divided into four classes. Rather than focusing on the actual numerical value of the indicator for each county, the quartile approach emphasizes the variation in data values among counties. The legend accompanying the map allows the reader to see the actual magnitude of variation among the counties for that indicator. Quartiles make it easy for the reader to make intuitive comparisons among counties; the darkest shaded counties are in the "top quarter," the lightest shaded counties are in the "bottom quarter," and so forth. Quartiles also facilitate comparisons between maps in the atlas ("this county ranks in the bottom quartile on all three of these indicators").

Two notes: (1) Whenever the number of counties cannot be evenly divided by four, the convention for this atlas series is to reduce the size of the highest quartile first, then the next quartile if needed, then the third quartile if needed. Hence eleven counties would be divided into groups of 2, 3, 3, and 3, with the group of 2 having the highest data values/darkest shading. (2) Counties with identical data values are grouped in the same quartile, even if this results in quartiles of unequal size.

Note on La Paz County – La Paz County, Arizona, was formerly part of Yuma County. La Paz was established as a separate county on January 1, 1983. In cases where indicators rely on data that predate the separation of the two counties, La Paz and Yuma counties are combined as one entity on the map.

Note on Political Boundaries – The regional base map depicts the formally defined political boundaries of states and counties.

Map Sources – The regional map on the cover and at the beginning of the atlas was generated from the North American HYDRO1k dataset (http://edcdaac.usgs.gov/gtopo30/hydro/) developed at the U.S. Geological Survey's EROS Data Center. The standard region of interest map used throughout the atlas was generated from U.S. Geological

Survey shapefiles. Contextual information (roads and cities) was obtained from the U.S. Geological Survey (http://www.nationalatlas.gov).

Production – Indicator data for the atlas were compiled in Microsoft Excel 2000. These were linked to U.S. Geological Survey shapefiles using ESRI ArcMap GIS 8.3. The GIS files were imported into Adobe Illustrator 9.0 for final map design. Text was prepared in Microsoft Word 2000. The final atlas layout (text, maps, graphics) was completed using Adobe InDesign 2.0.

Text Sources – Additional web resources used to prepare park and regional descriptions are:

- Saguaro National Park; http://www.nps.gov/sagu
- Friends of Saguaro National Park; http://www.friendsofsaguaro.org/
- Descriptions of the Ecoregions of the United States; http://www.fs.fed.us/institute/ecoregions/ecoreg1 home.html
- Statewide Economic Study 2002: Retirement Migration in Arizona; http://www.azcommerce.com/pdf/prop/ sesreports/Retirement.pdf

Appendix 3: Technical Notes on Measurement of Selected Indicators

[1] Persons enumerated in the census were counted as inhabitants of their usual place of residence, which generally means the place where a person lives and sleeps most of the time. This place is not necessarily the same as the legal residence, voting residence, or domicile. In the vast majority of cases, however, the use of these different bases of classification would produce substantially the same statistics, although appreciable differences may exist for a few areas.

[2] For an explanation of Woods & Poole's projection methods see page 11 in the Woods and Poole Technical Documentation manual.

[3] **Population density** is measured as the average number of people per square mile. This number is calculated by dividing the total number of people by the total area per county. In counties with federal lands, excluding these areas from the calculation of population density would result in a higher population density.

[4] See note above on population density.

[5] See note above on population density.

[6] **Urban population** is measured as the percentage of the total population living in urban areas. An urban area includes all territory, population, and housing units in urbanized areas and in places of 2,500 or more persons outside urbanized areas. An urbanized area has a population concentration of

at least 50,000 inhabitants, and generally consists of a central city and the surrounding, closely settled, contiguous territory having a density of at least 1,000 persons per square mile. The complete criteria are available from http://www.census.gov/geo/www/ua/ua_2k.html.

[7] Economic activity is categorized as belonging to one of four **industry categories**: agriculture/natural resources, construction/manufacturing, sales/services, and government. Individual workers, regardless of their specific job responsibilities, are classified according to the category their overall company or organization belongs to. Thus, while accounting is considered a "service" activity, an accountant for a mining company would be counted as working in "agriculture/natural resources." "Government" includes all federal government workers and all state/local employees, such as teachers, police, firefighters, etc. Even though government jobs may involve construction, natural resource management, or provision of services, they are still counted as belonging to the "government" category.

[8] See note above on industry categories.

[9] See note above on industry categories.

[10] See note above on industry categories.

[11] **Poverty** is measured as the percentage of the total population living below the poverty level. The poverty level is defined as earnings of $17,029 or less for a family of four persons (1999). Poverty thresholds are applied on a national basis and are not adjusted for regional, state, or local variations in the cost of living.

[12] **Racial composition** is based upon self-identification by people responding to the U.S. Census; it does not denote any clear-cut scientific definition of biological stock. Census respondents are asked to classify themselves according to the race with which they most closely identify. Specific responses such as "Polish," "Haitian," "Thai," or "Lakota" were coded more generally as belonging to one of six general categories (White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Some Other Race respectively). Respondents to Census 2000 could indicate more than one race, and these respondents are grouped together in the category Two or More Races. Persons of Hispanic or Latino origin may be of any race. People of Hispanic origin who are not white were counted in the Hispanic group and were also counted in the Black, American Indian and Alaska Native, Asian, or Native Hawaiian or Other Pacific Islander group they indicated.

[13] **Racial diversity** is defined for this measure as the percentage of the population that classifies themselves as being non-White. Diversity by this definition does not necessarily measure the degree of "variety" in the population. For example, a hypothetical county with a 90% Asian population would be considered more "diverse" than a county in which each of the six major race groups constituted 10% of the population (in the latter case, diversity would be measured as 60%). The Hispanic or Latino origin category was not included in this measure because persons of Hispanic or Latino origin may be of any race (including White). Data on the Hispanic population is included on pages 42 and 43.

[14] For the census, persons are classified according to the highest level of school completed or the highest degree received. The question included instructions to report the level of the previous grade attended or the highest degree received for persons currently enrolled in school.

[15] These data represent the person's own perception about his or her ability to speak English or, because Census questionnaires are usually completed by one household member, the responses may represent the perception of another household member. Persons 5 years old and over who reported that they spoke a language other than English were also asked to indicate their ability to speak English based on one of the following four categories: "not at all," "not well," "well," and "very well."

[16] **Recreation and Tourism** is composed of the arts, entertainment, and recreation sector and the accommodation subsector, both a part of The North American Industry Classification System (NAICS). The arts, entertainment, and recreation sector includes museums, historical sites, gambling and recreation industries, golf courses and country clubs, fitness and recreational sports centers, and all other amusement industries. The accommodation subsector is comprised of establishments including hotels, motels, bed and breakfasts, RV parks, recreational camps, and vacation camps. For a complete definition of these NAICS categories please consult http://www.census.gov/epcd/www/naics.html.

[17] See note above on recreation/tourism.

[18] See note above on recreation/tourism.

[19] Housing unit is a house, apartment, mobile home or trailer, group of rooms, or single room occupied or, if vacant, intended for occupancy as separate living quarters. Seasonal, recreational, or occasional use refers to vacant units used, or intended for use, only in certain seasons or for weekend or other occasional use throughout the year. A housing unit is vacant if no one is living in it at the time of enumeration, unless its occupants are only temporarily absent. Units temporarily occupied at the time of enumeration entirely by persons who have a usual residence elsewhere are also classified as vacant.

[20] **Federal expenditures** include expenditures, or obligation for, direct payments for individuals, procurement, grants, salaries and wages, direct loans, and guaranteed loans and insurance. Grant awards are reported by county of the initial recipient; thus if the initial recipient is the state government, the county in which the state capital is located is reported as having "received' that "pass-through" grant, even though the monies are subsequently distributed to other local governments.

[21] **Federal lands** include all tax-exempt federal lands administered by the Bureau of Land Management (BLM), the National Park Service, the U.S. Fish and Wildlife Service, the U.S. Forest Service, federal water projects, and some military installations (tribal lands are not included). The BLM calculates the amount of federal land within counties in order to administer the federal government's payments-in-lieu-of-taxes (PILT) program.

[22] The U.S. Geological Survey produces the **Federal Lands and Indian Reservations** map layer. This map layer does not include any federally and Indian held land that has an areal extent smaller than 640 acres. For more information and metadata, consult http://www.nationalatlas.gov/fedlandsm.html.

[23] **Farmland** consists primarily of agricultural land used for crops, pasture, or grazing. Also included is woodland and wasteland not actually under cultivation or used for pasture or grazing, provided it was part of the farm operator's total operation. Farmland includes acres in the Conservation Reserve, Wetlands Reserve Programs, or other governmental programs. Farmland includes land owned and operated as well as land rented from others. Land used rent-free is included as land rented from others. All grazing land, except land used under government permits on a per-head basis, is included as farmland provided it was part of a farm or ranch. Land under the exclusive use of a grazing association is reported by the grazing association and included as farmland. All land in American Indian reservations used for growing crops or grazing livestock is included as farmland. Land in reservations not reported by individual American Indians or non-Native Americans is reported in the name of the cooperative group that used the land.

[24] Certain **MAs** are defined around two or more nuclei. Each MA must contain either a place with a minimum population of 50,000 or a U.S. Census Bureau-defined urbanized area and a total MA population of at least 100,000. For a complete definition, consult http://www.census.gov/geo/www/cob/ma_metadata.html.

[25] The Economic Research Service classifies counties according to their level of **urbanization**. The classification consists of nine mutually-exclusive codes:

METROPOLITAN COUNTIES

1) Counties in large metropolitan areas of 1 million or more residents
2) Counties in small metropolitan areas of less than 1 million residents

NONMETROPOLITAN COUNTIES

Adjacent to a large metro area and

3) contains all or part of its own city of 10,000 or more residents
4) does not contain any part of a city of 10,000 or more residents

Adjacent to a small metro area and

5) contains all or part of its own city of 10,000 or more residents
6) does not contain any part of a city of 10,000 or more residents

Not adjacent to a metro area and

7) contains all or part of its own city of 10,000 or more residents
8) contains all or part of its own town of 2,500 to 9,999 residents
9) totally rural, does not contain any part of a town of 2,500 or more residents

[26] The issuing of **building permits** for privately-owned housing units does not necessarily imply that a community is growing, since any community will experience an ongoing replacement of aging houses and buildings. Also, a catastrophic event such as a major storm or fire can generate a short-term surge in the number of building permits issued.

Thus a better indicator of growth is the average annual change in the number of building permits issued over a ten year period. Changes in local codes or enforcement can also affect the number of building permits issued. This measure includes data about new housing units intended for occupancy and maintained by the occupants. It excludes hotels, motels, and group residential structures such as nursing homes and college dormitories. All public housing and nonresidential buildings are also excluded. For a complete definition, consult http://www.census.gov/const/www/newresconstdoc.html.

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